Eef Rasing

Acquisition and generalization of social behaviors in language-disabled deaf persons

ACQUISITION AND GENERALIZATION OF SOCIAL BEHAVIORS IN LANGUAGE-DISABLED DEAF PERSONS

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Acquisition and Generalization of Social Behaviors in Language-Disabled Deaf Persons

Een wetenschappelijke proeve op het gebied van de Sociale Wetenschappen

Proefschrift
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aan de Katholieke Universiteit Nijmegen,
volgens besluit van het College van Decanen
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Hoofdstuk 1
Inleiding

1.0 Inleiding en overzicht

Gedurende de laatste twee decennia is er hoge prioriteit om auditief gehandicapten te integreren in de samenleving. Succesvolle integratie is afhankelijk én van de bereidheid en de mogelijkheden van de samenleving om auditief gehandicapten op te nemen én van de sociale en communicatieve competentie van auditief gehandicapten. Sociaal competent handelen veronderstelt sociale cognitie, dit is, inzicht in sociale situaties en kennis over normen en waarden die binnen een samenleving gelden, vaardigheden om conform deze waarden en normen te handelen en motivatie om aangepast sociaal gedrag te vertonen.

In dit hoofdstuk zal eerst ingegaan worden op een aantal factoren die van invloed kunnen zijn op het sociaal competent handelen van auditief gehandicapten. Vervolgens wordt aan de hand van een aantal onderzoeken geconcludeerd dat emotionele en gedragsproblemen vaker voorkomen bij auditief gehandicapte kinderen dan bij horende kinderen. Tenslotte worden een zestal studies, waarin programma's ter remediëring van tekorten in de sociale vaardigheden van auditief gehandicapten worden geëvalueerd, besproken en getoetst aan een aantal inzichten die binnen het wetenschappelijk gedragsonderzoek van belang zijn.

1.1 Factoren die van invloed kunnen zijn op de sociale ontwikkeling en persoonlijkheidsontwikkeling van auditief gehandicapten

Sociale ontwikkeling en persoonlijkheidsontwikkeling zijn, evenals cognitieve ontwikkeling, sterk gerelateerd aan de taalontwikkeling. In de literatuur met betrekking tot de sociale en persoonlijkheidsontwikkeling van auditief gehandicapten wordt niet zozeer de gehoorstoornis benadrukt dan wel het gebrek aan taal, en daaraan gerelateerd, het gebrek aan communicatie (Altshuler, 1974; Cohen, 1980; Evans, 1975; Kusché & Greenberg, 1983; Lederberg & Mobley, 1990; Meadow, 1968, 1980; Meadow & Trybus, 1979; Moores, 1978; Myklebust, 1960; Schlesinger, 1978; Vernon, 1969). Communicatie wordt beschouwd als de

belangrijkste vorm van sociale interactie, waarin waarden en normen van een samenleving worden geïnternaliseerd, waarin gevoelens en ervaringen worden benoemd en gevormd en waarin de persoon leert zijn gedachten, gevoelens en gedrag te manipuleren (Meadow & Trybus, 1979). Een gebrek aan communicatie heeft dan ook een indringend negatief effect op de sociale en persoonlijkheidsontwikkeling.

1.1.1 Omgevingsfactoren

In de literatuur worden een aantal factoren vermeld die direct of indirect via de communicatie invloed uitoefenen op de sociale en persoonlijkheidsontwikkeling van auditief gehandicapten. Meer precies, de reactie van ouders op de doofheid van het kind, de kwaliteit van de ouder-kind relatie, de gehoorstatus van ouders, de communicatiecode en de educatieve setting worden in de literatuur veelvuldig in verband gebracht met de kwaliteit van communicatie.

Resultaten van een onderzoek door Freeman, Malkin, en Hastings (1975) onder 120 prelinguaal gehoorgestoorde kinderen in de leeftijd van vijf tot vijftien jaar geven weer dat in 75% van de gevallen één of beide ouders de doofheid als eerste vermoeden rond het eerste levensjaar. De mate van het gehoorverlies is op dit tijdstip van invloed De bevestiging, meestal door een KNO-arts, volgt gemiddeld meer dan acht en halve maand later De periode tussen het vermoeden van de ouders dat er iets mis is en het moment van de diagnose kenmerkt zich door onzekerheid en emotionele uitputting (Moores, 1978) Het effect van de diagnose op ouders is enorm; veel ouders geraken in een depressie (Althshuler, 1974) Meadow en Trybus (1979) beschreven een scala van reakties van ouders op de doofheid van hun kind Reakties varieren van shock, verwarring, hulpeloosheid en ongeloof tot schuld, wanhoop, verdriet en afwijzing Kampfe (1989) plaatste de reakties van ouders in het perspectief van een rouwproces. De stadia die ouders daarin doorlopen zijn shock, erkenning, ontkenning en aanvaarding en constructieve actie. De reakties van ouders op de doofheid van het kind zijn afhankelijk van individuele en situationele factoren

De ambivalente gevoelens en gedragingen van ouders ten opzichte van hun kind, in samenhang met de communicatieve beperkingen van het kind, zijn van invloed op de gehechtheidsrelatie tussen moeder en kind en op de verwerving van autonomie

door het kind (Althshuler, 1974; Harris, 1978a; Moores, 1982; Schlesinger, 1978; Schlesinger & Meadow, 1972; Watson, Henggeler, & Whelan, 1990). Lederberg en Mobley (1990) concludeerden op basis van hun onderzoek naar de moeder-kind relatie bij 41 gehoorgestoorde- en 41 horende peuters dat gehoorgestoorde peuters, net als horende peuters, in staat zijn een positieve, wederzijdse veilige relatie met hun moeders op te bouwen en dat de kwaliteit van de gehechtheidsrelatie meer afhankelijk is van moeder-kenmerken dan van kind-kenmerken. Naarmate de leeftijd toeneemt, neemt echter het belang van de taal toe en zal de gehoorstoornis een grotere rol gaan spelen. Schlesinger en Meadow (1972) vonden dat ouders van gehoorgestoorde peuters, met name horende moeders, meer beperkend, gebiedend, beschermend, controlerend en didactisch gedrag vertoonden en minder flexibel, aanmoedigend en goedkeurend gedrag dan ouders van horende peuters. Zij schreven dit toe aan de frustraties die ouders ervaren over de communicatieve beperkingen van het kind. Andere onderzoekers (Althshuler, 1974; Brinich, 1980; Goss, 1970) gaven een beschrijving van soortgelijk gedrag van moeders van gehoorgestoorde peuters.

Interessant zijn de onderzoeken die de gehoorstatus van ouders als onafhankelijke variabele afzetten tegen een veelheid van afhankelijke variabelen die fungeren als operationalisaties van de sociale en persoonlijkheidsontwikkeling van auditief gehandicapten (Althshuler, 1974; Harris, 1978b; Meadow, 1968, 1980; Vernon, 1969; Weisel, 1988). Gehoorgestoorde kinderen met gehoorgestoorde ouders, ongeveer 10% van de totale populatie (Greenberg & Kusché, 1989), zijn over het algemeen emotioneel volwassener, onafhankelijker, communicatiever en minder impulsief dan gehoorgestoorde kinderen met horende ouders. Daarnaast tonen ze meer verantwoordelijkheid, hebben ze een positiever zelf-concept en vertonen ze minder gedragsproblemen. De verklaringen hiervoor zijn de hierboven beschreven invloeden van de emotionele reactie van ouders op de diagnose en de communicatieve mogelijkheden binnen de ouder-kind relatie. Gehoorgestoorde ouders ervaren de geboorte van hun gehoorgestoorde kind minder traumatisch en zij zijn in staat om vanaf de geboorte door middel van gebarentaal te communiceren met het kind. Een derde verklaring is dat er onder de groep gehoorgestoorde kinderen met gehoorgestoorde ouders minder kinderen zouden zijn met additionele handicaps (Meadow, 1980).

Een laatste factor die direct, of indirect via de communicatie, een invloed uitoefent op de sociale en persoonlijkheidsontwikkeling van auditief gehandicapten is de educatieve setting waarin een gehoorgestoord kind c.q. adolescent zich bevindt. Evans (1975) vond op basis van resultaten uit vragenlijsten, ingevuld door 123 dove adolescenten van een residentiële school en 321 horende adolescenten van twee middelbare scholen, dat dove adolescenten, onafhankelijk van het communicatieprobleem, gedepriveerd zijn in de normale, symbolische interactie met niet-dove mensen. De consequentie is "insufficient exposure to, and lack of learning of, socially significant norms, roles, attitudes, values and patterns of behavior (the culture) commonly induced by members of our society" (Evans, 1975, p. 545). Meadow (Schlesinger & Meadow, 1972) concludeerde op basis van oordelen van leerkrachten met betrekking tot sociale ontwikkeling dat dove kinderen van dove ouders in een residentiële setting (N=58) sociaal volwassener zijn dan dove kinderen van horende ouders in een niet-residentiële setting (N=74), en dat laatsten weer sociaal volwassener zijn dan dove kinderen van horende ouders in een residentiële setting (N=58). Farrugia en Austin (1980) concludeerden daarentegen, op basis van hun onderzoek onder 200 leerlingen van tien tot vijftien jaar, dat dove adolescenten in niet-residentiële settings onvolwassener en minder sociaal en emotioneel aangepast zijn dan dove adolescenten in een residentiële setting en dan horende en slechthorende adolescenten (in een niet-residentiële setting). Ook hebben ze, evenals slechthorende adolescenten, over het algemeen een negatiever zelf-concept dan dove adolescenten in een residentiële setting en dan horende adolescenten. Farrugia en Austin schrijven dit toe aan communicatie- en ervaringsdeprivatie als gevolg van een aantal factoren die discriminerend werken, zoals stereotype sociale reakties op mensen die anders zijn. Arnold en Tremblay (1979), McCauley, Bruininks en Kennedy (1976) en Antia (1982) toonden aan dat auditief gehandicapte kinderen in geïntegreerde settings meer interacteren met auditief gehandicapte kinderen en met leerkrachten dan met horende kinderen. Volgens Brackett en Henniges (1976) correleert de frequentie van interactie tussen gehoorgestoorde kinderen en horende kinderen met de linguïstisch capaciteiten van het gehoorgestoorde kind. Vandell en George (1981) concludeerden op basis van hun onderzoek naar interactie-karakteristieken dat zowel hoeveelheid als duur van interactie respectievelijk minder en korter zijn in interacties tussen horenden en gehoorgestoorden dan tussen horenden onderling en tussen gehoorgestoorden

onderling Gehoorgestoorde kinderen initieren in het algemeen wel vaker interacties, maar deze worden ook vaker genegeerd en afgewezen

1.1.2 Fysiologische factoren

De sociale en persoonlijkheidsontwikkeling van auditief gehandicapten wordt niet alleen beinvloed door de hierboven beschreven omgevingsfactoren, maar ook door fysiologische factoren Vernon (1969) concludeerde op basis van zijn onderzoek onder 1468 dove kinderen die tussen 1953 en 1964 aangemeld waren aan een residentiele school voor doven dat de etiologie van de doofheid van invloed kan zijn op het gedrag Op basis van vragenlijsten ingevuld door leerkrachten werden dove kinderen als gevolg van rubella, meer dan andere dove kinderen, gekarakteriseerd als slecht psychologisch aangepast Dit zou niet zozeer een gevolg van de doofheid zijn dan wel van door rubella veroorzaakte neurologische dysfuncties Andere onderzoeken bevestigen deze hypothese (zie Van Dijk, 1991) Op basis van het jaarlijks landelijk onderzoek in de Verenigde Staten onder gehoorgestoorde schoolgaande kinderen over het schooljaar 1972-1973 vonden Jensema en Trybus (geciteerd in Meadow & Trybus, 1979) significant meer gedrags- en emotionele problemen bij dove kinderen als gevolg van rubella, geboortetrauma, prematuriteit, complicaties gedurende de zwangerschap en hoge koorts in de kindertijd Zij concludeerden tevens dat het vertonen van gedrags- en emotionele problemen ook samenhangt met het hebben van één of meer additionele handicaps Myklebust (1964) beschouwt de mate en het aanvangstijdstip van gehoorverlies als twee belangrijke variabelen voor het psychologisch functioneren van het auditief gehandicapte kind

1.2 Het voorkomen van emotionele problemen en gedragsproblemen bij auditief gehandicapten

Er is veel aandacht besteed aan de frequentie van voorkomen van emotionele en gedragsproblemen bij gehoorgestoorde kinderen Onderzoeken (Freeman, Malkin, & Hastings, 1975, Meadow,1980, Meadow & Schlesinger, 1971, Vernon, 1969) toonden aan dat deze problemen significant vaker voorkomen bij gehoorgestoorde kinderen dan bij horende kinderen In zijn onderzoek onder dove kinderen die tussen 1953 en 1964 aangemeld waren aan een residentiele school voor doven, vond Vernon (1969), op basis van vragenlijsten ingevuld door leerkrachten,

classificatie van psychologische intake-onderzoeken naar ernst van emotionele problemen, en school-staten, dat 20,7% van de kinderen slecht psychologisch aangepast waren; 22,5% van de kinderen emotionele stoornissen vertoonden, die een normale schoolloopbaan in de weg staan; en 9 procent van de kinderen voortijdig de school hadden verlaten als gevolg van emotionele stoornissen. Meadow en Schlesinger (1971) vroegen aan 34 leerkrachten en 46 slaapwachten van een residentiële school voor doven om uit de totale populatie van 516 kinderen die kinderen te identificeren, die (a) ernstig emotioneel gestoord waren en als gevolg hiervan doorverwezen zouden moeten worden voor psychiatrische hulp of (b) gedragsproblemen vertoonden, die een normale schoolloopbaan in de weg staan. Volgens deze leerkrachten en slaapwachten vertoonden 11,6% van de kinderen ernstig emotionele stoornissen en 19,6% gedragsproblemen. Dit is respectievelijk vijf en drie maal zoveel als bij horende kinderen. Meer dan 30% van de dove kinderen vertoonden dus in meer of mindere mate gedragsproblemen. Freeman, Malkin en Hastings (1975) concludeerden, op basis van vragenlijsten afgenomen bij ouders en leerkrachten, dat 22,6% van een totaal van 120 gehoorgestoorde kinderen in de leeftijd van vijf tot vijftien jaar, in meer of mindere mate psychiatrische stoornissen vertoonden. Op basis van het jaarlijks landelijk onderzoek in de Verenigde Staten onder gehoorgestoorde schoolgaande kinderen over het schooljaar 1971-1972, concludeerden Gentile en McCarthy (geciteerd in Meadow, 1980) dat 9,6% van deze kinderen emotionele of gedragsproblemen vertoonden. In het schooljaar 1975-1976 was dit percentage 8,4% (Jensema & Trybus [geciteerd in Meadow, 1980]).

Hoewel de onderzoeken onderling niet vergelijkbaar zijn vanwege verschillen in onderzoekspopulaties, dataverzameling en definities van het problematisch gedrag, kan mijns inziens toch geconcludeerd worden dat emotionele en gedragsproblemen vaker voorkomen bij gehoorgestoorde kinderen dan bij horende kinderen, omdat (a) de percentages in bovenstaande studies vele malen hoger liggen dan bij horende kinderen en (b) de data vooral verzameld zijn bij ouders en leerkrachten; personen die voortdurend in contact staan met gehoorgestoorde kinderen.

Naast de hogere frequentie van voorkomen van emotionele en gedragsproblemen worden in de literatuur ook een aantal generaliserende karakteristieken van auditief gehandicapten genoemd. Zij worden vaak beschreven als sociaal / emotioneel

onvolwassen, wat zich uit in impulsiviteit, egocentriciteit en rigiditeit (Althshuler, 1974, Harris, 1978b; Hirshoren & Schnittjer, 1979, Levine, 1960; Myklebust, 1960, Neyhus, 1964; Reivich & Rothrock, 1972, Schlesinger & Meadow, 1972; Vernon, 1969). Voorts zouden auditief gehandicapten een negatief zelf-concept hebben (Craig, 1965, Farrugia & Austin, 1980; Grimes & Prickett, 1988; Schlesinger & Meadow, 1972) en zouden zij een achterstand in het verwerven van sociale cognitie vertonen (Bachara, Raphael, & Phelan, 1980; Cates & Shontz, 1990; Kusché & Greenberg, 1983; Lou & Charlson, 1991; Odom, Blanton, & Laukhuf, 1973, Sam & Wright, 1988).

1.3 Aanbevelingen

Sociale en persoonlijkheidsontwikkeling van auditief gehandicapten worden negatief beïnvloed door een interactie van factoren, sommigen als consequentie van de auditieve handicap en sommigen als consequentie van de mogelijkheden van de omgeving om hiermee om te gaan Alhoewel in het gunstigste geval deze interactie van factoren kan resulteren in een normale sociale en persoonlijkheidsontwikkeling, wordt in de literatuur het resultaat van deze interactie vertaald in een (a) frequenter voorkomen van emotionele en gedragsproblemen, (b) aantal generaliserende karakteristieken van auditief gehandicapten, (c) afwijkend interactiepatroon en (d) achterstand in het verwerven van sociale cognitie. De interactie van bovengenoemde factoren wordt vaak gekarakteriseerd als een communicatie- en ervaringsgedepriveerde situatie.

In de literatuur worden een aantal aanbevelingen gedaan om deze situatie te verbeteren Een aantal richten zich op de hierboven genoemde factoren Deze zijn: (a) streven naar vroegere diagnose en hieraan gekoppeld een betere begeleiding van ouders (Althshuler, 1974, Calderon, Greenberg, & Kusché, 1991; Cohen, 1980; Freeman, Malkin, & Hastings, 1975; Greenberg & Kusché, 1989; Meadow, 1980; Meadow & Trybus, 1979), (b) het zo snel mogelijk in contact komen met het auditief gehandicapte kind in de vorm van een effectieve communicatie die bij het auditief gehandicapte kind past, zoals gebarentaal (Althshuler, 1974; Freeman, Malkin, & Hastings, 1975, Greenberg & Kusché, 1989, Meadow, 1968, 1980; Meadow & Trybus, 1979, Moores, 1978, Schlesinger, 1978; Schlesinger & Meadow, 1972, Vernon, 1969), en (c) integratie van auditief gehandicapten in het

reguliere onderwijs (Antia, 1982, 1985, Arnold & Tremblay,1979, Brackett & Henniges, 1976, Kennedy & Bruininks, 1974, McCauley, Bruininks, & Kennedy; 1976; Strong & Shaver, 1991, Vandell & George, 1981). Het moge duidelijk zijn dat de eerste twee aanbevelingen vooral van belang zijn bij auditief gehandicapte peuters en kleuters. Mijns inziens is fysieke nabijheid door integratie van auditief gehandicapten in het reguliere onderwijs een mogelijkheid om de communicatie- en ervaringsdeprivatie ongedaan te maken, maar dit zal dan voorafgegaan moeten zijn door het expliciet trainen van specifieke sociale vaardigheden en door een gestructureerde aanbieding van mogelijkheden tot interactie met zowel auditief gehandicapte als horende leeftijdsgenoten. Tevens zullen horende leeftijdsgenoten gewezen moeten worden op de mogelijkheden en onmogelijkheden van auditief gehandicapten met betrekking tot hun interactief functioneren. Een aantal aanbevelingen, vertaald in programma's, richten zich dan ook op remediering van specifieke tekorten, hetzij in de sociale cognitie, hetzij in de sociale vaardigheden.

1.4 Programma's voor het trainen van sociale vaardigheden

1.4.0 Algemeen

Programma's gericht op remediering van tekorten in de sociale cognitie, bijvoorbeeld het in Nederland veel toegepaste PATHS curriculum voor auditief gehandicapte kinderen (Greenberg, Kusché, Calderon, Gustafson, & Coady, 1983), vallen buiten de hiernavolgende discussie omdat het aanleren van sociale cognitie niet noodzakelijk tot gedragsverandering leidt (Kazdin, 1974) Rushton (1982) stelt dat sociaal gedrag voor een groot deel geattribueerd kan worden aan observationeel en operant leren, zonder mediatie van perspectief nemen Deze stelling krijgt extra betekenis voor de gerichtheid van een programma ter vermindering van emotionele en gedragsproblemen bij auditief gehandicapten in het licht van de hypothese van ervaringsdeprivatie bij deze populatie.

Programma's gericht op remediering van specifieke tekorten in de sociale vaardigheden zijn met succes gebruikt bij een diversiteit van klinische populaties, zoals psychiatrische patienten (bijv , Eisler, Hersen, & Miller, 1974), emotioneel gestoorde kinderen (bijv , Amish, Gesten, Smith, Clark, & Stark, 1988; Baum, Clark, McCarthy, Sandler, & Carpenter, 1986, Phenis, Hansen, Ford, Smith Jr., Stark, & Kelly, 1987), impopulaire en sociaal teruggetrokken kinderen (bijv.,

Bierman, 1986; Bierman & Furman, 1984; Bornstein, Bellack, & Hersen, 1977; Conger & Keane, 1981; Gresham & Evans, 1987; Gresham & Nagle, 1980; Kratochwill & French, 1984; La Greca & Santogrossi, 1980; Mize & Ladd, 1990), kinderen met leerstoornissen (bijv., Berler, Gross, & Drabman, 1982; Blackbourn, 1989; Gresham & Reschley, 1986; La Greca & Mesibov, 1981; Zigmond & Brownlee, 1980), autistische personen (bijv., Mesibov, 1984), visueel gehandicapten (bijv., Ammerman, Van Hasselt, Hersen, & Moore, 1989; Sacks & Gaylord-Ross, 1989; Van Hasselt, Hersen, Kazdin, Simon, & Mastanuono, 1983) en zwakzinnigen (bijv., Bates, 1980; Bornstein, Bach, McFall, Friman, & Lyons, 1980; Matson & Adkins, 1980; Matson & Andrasik, 1982; Park & Gaylord-Ross, 1989; Ralph & Birnbrauer, 1986; Wacker, 1984). Deze programma's hebben gebruik gemaakt van procedures uit de operante en sociale leertheorie, zoals instructie, modeling, groepsdiscussie, rollenspel, oefening van gedrag, coaching, feedback, opdrachten, en positieve reinforcement.

1.4.1 Auditief gehandicapten

Alhoewel in de literatuur veel aandacht wordt besteed aan tekorten in de sociale vaardigheden van auditief gehandicapten, zijn er weinig studies uitgevoerd die procedures ter remediëring van deze tekorten hebben geëvalueerd. Barton en Osborne (1978) gebruikten positieve oefening tijdens vrije spelsituaties om de vaardigheid "delen" te verbeteren van vijf jonge gehoorgestoorde kinderen. Het delen van speelgoed nam significant toe in functie van de training. Gedurende een follow-up, vijftien weken na de training, was het positieve effect van training nog steeds aanwezig. Het effect van training generaliseerde ook naar een andere leerkracht, ander speelgoed en een klas met kinderen die geen training hadden ondergaan. Lemanek en Gresham (1984) gebruikten een trainingspakket, bestaande uit instructie, modeling, oefening van gedrag, feedback en sociale reinforcement, om een aantal aspecten van sociaal interactief gedrag bij een 17 jarige dove vrouw te verbeteren. De training had een positief effect op (a) de duur van de taaluitingen, (b) het aantal taaluitingen met de juiste inhoud en (c) de tijd tussen een prompt en de respons tijdens rollenspelen. Trainingswinst bleef echter niet in stand over tijd en keerde terug naar baseline niveau tijdens follow-up. Lemanek, Williamson, Gresham en Jensen (1986) repliceerden bovenstaande studie met vier ernstig gehoorgestoorde adolescenten in de leeftijd van elf tot achttien jaar. De duur van de taaluitingen en het aantal taaluitingen met de juiste inhoud namen toe in functie van

de training tijdens rollenspelen voor alle vier personen. Voor twee personen nam de tijd tussen een prompt en de respons af. Trainingseffecten generaliseerden naar andere rollenspelen en naar een analoge situatie. Trainingswinst bleef nu wel in stand over de tijd gedurende een follow-up periode van twee maanden. Schloss, Smith en Schloss (1984) stelden het positieve effect vast van een trainingspakket op "vragen stellen", "bekritiseren van een produkt of hulp", "kort gesprek voeren" en "reageren op suggestieve verkoop" bij vier ernstig gehoorgestoorde adolescenten. Dit pakket bestond uit een kaartspel, modeling, oefening van gedrag, feedback en reinforcement. Het effect werd vastgesteld tijdens rollenspelen en in een natuurlijke setting. Tisdelle en Lawrence (1986) gebruikten modeling, instructie en oefening van gedrag om de nonverbale communicatieve vaardigheden te verbeteren van een 29 jaar oude gehoorgestoorde man. Training resulteerde in een toename van (a) oogcontact, (b) aantal correcte lichaamsoriëntaties en gebaren en (c) aantal inhoudelijk correcte verbale uitingen tijdens getrainde en ongetrainde rollenspelen. Er werden geen follow-up metingen uitgevoerd. Kreimeyer en Antia (1988), tenslotte, gebruikten modeling, verbale en fysieke prompts om "delen", "conversatie" en "positieve interactie" te verbeteren bij 12 gehoorgestoorde jonge kinderen. Om generalisatie te bewerkstelligen werd gebruik gemaakt van twee procedures, namelijk: (a) gebruik maken van dezelfde stimuli over settings en (b) aanbieden van voldoende verschillende ervaringsmomenten per stimuli. "Delen", "conversatie" en "positieve interactie" namen toe in functie van de training tijdens gestructureerde spelsituaties. Generalisatie van de effecten naar vrije spelsituaties stond in functie van de procedures om generalisatie te bewerkstelligen.

1.4.2 Procedurele axioma's

1.4.2.1 Keuze en concretisering van de doelgedragingen

Volgens Van Hasselt, Hersen, Whitehill en Bellack (1979) is de keuze van doelgedragingen voor training meestal gebaseerd op vooronderstellingen van de onderzoeker. Vanuit een sociaal validiteits perspectief zou deze keuze echter gemaakt moeten worden door de personen voor wie de training is bedoeld of door belangrijke mensen in de omgeving van deze personen (Van Houten, 1979; Wolf, 1978). Dit geldt eveneens voor de concretisering van de doelgedragingen. Schwartz en Baer (1991) onderscheiden vier groepen van belanghebbenden, namelijk: directe gebruikers, indirecte gebruikers, mensen in de directe omgeving en mensen uit dezelfde maatschappij. Directe gebruikers zijn de personen voor wie de training

bedoeld is, bijvoorbeeld een gedragsgestoord kind. Indirecte gebruikers zijn de personen die een trainingsprogramma wensen voor anderen in de directe omgeving, bijvoorbeeld de ouders of leerkracht. Mensen in de directe omgeving zijn mensen die regelmatig omgaan met de directe- en indirecte gebruikers, bijvoorbeeld de buren van de persoon in kwestie of de personen uit de buurt. Mensen uit dezelfde maatschappij zijn mensen die weliswaar niet omgaan met de directe- of indirecte gebruikers, maar wel geconfronteerd worden met allerlei zaken aangaande de directe gebruikers in het algemeen, bijvoorbeeld belastingbetalers die voor het trainingsprogramma betalen. Schwartz en Baer stellen dat bij de keuze en de concretisering van het doelgedrag, de invloed die iedere afzonderlijke groep op het succes van de training van het desbetreffend doelgedrag heeft, maatgevend moet zijn voor de inbreng van die groep

De keuze en concretisering van het doelgedrag dient echter gelegitimeerd te worden door bevindingen uit normatief vergelijkingsonderzoek (Van Houten, 1979; Yeaton, 1988) Door normatief vergelijkingsonderzoek kan worden vastgesteld in welke mate de frequenties van voorkomen van de doelgedragingen bij de gehoorgestoorde groep verschillen van die van andere groepen.

In de zes hierboven besproken studies werd alleen in de studies van Lemanek en Gresham (1984) en Lemanek, Williamson, Gresham en Jensen (1986) vermeld hoe en door wie de doelgedragingen geselecteerd waren In beide studies werd gebruik gemaakt van baseline testscores op de "Social Skills Test for Children" (SST-C; Williamson, Moody, Granberry, Lethermon, & Blouin, 1983) om doelgedragingen voor training te selecteren De test was genormeerd voor horende kinderen. De validiteit en betrouwbaarheid van een instrument dat genormeerd is op horende personen is twijfelachtig bij gebruik voor gehoorgestoorde personen. De overige studies verzuimen te vermelden hoe en door wie de doelgedragingen geselecteerd waren Schloss, Smith en Schloss (1984) beschrijven echter wel hoe en door wie de doelgedragingen geconcretiseerd werden. Zij vroegen managers van acht bedrijven wat de beste oplossingen waren met betrekking tot zestien items in rollenspel-situaties

1.4.2.2 De sociale validiteit van het programma en de resultaten

Het programma en de resultaten kunnen eveneens vanuit een sociaal validiteits perspectief beschouwd worden. Het beschouwen van het programma vanuit dit perspectief stelt de vraag in hoeverre het programma acceptabel wordt gevonden door de reeds eerder beschreven groepen van belanghebbenden (Wolf, 1978). Factoren die acceptatie van een programma mede bepalen zijn trainingsduur, inspanning die geleverd moet worden, mate van welbehagen, mate van inbreng en ethische factoren. Deze factoren zijn in dit perspectief van subjectieve aard. Schwartz en Baer (1991) stellen voor om gebruikers zelf een programma te laten kiezen nadat ze ervaring hebben opgedaan met meerdere programma's. Het beschouwen van de resultaten vanuit een sociaal validiteits perspectief stelt tevens de vraag in hoeverre gebruikers tevreden zijn met de resultaten. Dit geldt voor zowel beoogde als niet beoogde resultaten (Wolf, 1978). Het is niet de vraag naar de effectiviteit van het programma, maar naar het sociale belang van de effecten. Hoewel in veel onderzoek subjectieve data niet overeenkomen met objectieve data, is het toch van belang om deze data te verzamelen, daar het de gebruikers zijn die op basis van hun beleving van de effectiviteit uiteindelijk beslissen over het gebruik van een programma (Schwartz & Baer, 1991; Wolf,1978).

De leerkracht in de studie van Barton en Osborn (1978); de participanten en hun ouders in de studies van Lemanek en Gresham (1984) en Lemanek, Williamson, Gresham en Jensen (1986) en de participanten en leerkrachten in de studie van Schloss, Smith en Schloss (1984) vonden de gebruikte programma's effectief. Geen van de studies vermeldde procedures om de sociale acceptatie van het programma actief te bewerkstelligen noch het gebruik van instrumenten om dit construct te meten.

Het moge duidelijk zijn dat de sociale significantie van de doelgedragingen, de sociale acceptatie van het programma en het sociale belang van de effecten onderling sterk met elkaar samenhangen. Belanghebbenden dienen dan ook voortdurend, voor, tijdens en na de training, geconsulteerd te worden met betrekking tot deze drie aspecten.

1.4.2.3 De dataverzameling

In de literatuur over training van sociale vaardigheden wordt veel aandacht besteed aan de dataverzameling (Bellack, 1979; Cartledge & Milburn, 1986; Eisler, 1976; Foster & Ritchey, 1979; Gresham, 1981, 1986, 1988; Gresham & Elliott, 1984, 1987; Kennedy, 1988; Matson & Ollendick, 1988; Trower, Bryant, & Argyle, 1978; Van Hasselt et al., 1979). Zelfscoring, rating en sociometrische technieken zijn vooral bruikbaar voor selectie van personen voor training en voor diagnostische doeleinden. De meest gebruikte en gangbare methoden voor interventiedoeleinden zijn echter gedragsobservatie en gedragsinterview, waarbij het gedragsinterview vooral een functie heeft voor het: (a) selecteren van doelgedragingen; (b) definiëren van doelgedragingen in observeerbaar gedrag; (c) identificeren van antecedente, sequentiële, en consequente factoren, die in relatie staan met het vertonen van de doelgedragingen; en (d) ontwikkelen van een observatiesysteem om doelgedragingen te meten. Voor de evaluatie van interventies is gedragsobservatie het meest geschikt. Gedragsobservatie is sensitief in het vaststellen van het effect van een interventie. Het is niet reactief en daardoor bruikbaar voor herhaalde metingen in zowel single-subject designs als in experimentele groep designs. Het is specifiek ten aanzien van antecedente, sequentiële, en consequente factoren, die in relatie staan met het vertonen van de doelgedragingen. Het belangrijkste voordeel van gedragsobservatie is dat data objectief interpreteerbaar zijn, mits maatregelen getroffen worden om betrouwbaarheid en validiteit te waarborgen. Het vaststellen van het effect van een interventie door gedragsobservatie kan plaatsvinden in natuurlijke situaties en/of rollenspelen. In het laatste geval kan onderscheid gemaakt worden tussen rollenspelen waarin geïnteracteerd wordt met bekenden en rollenspelen waarin geïnteracteerd wordt met onbekenden (Eisler, 1976). Het vertonen van gedrag in een rollenspel heeft echter weinig predictieve validiteit voor hetzelfde gedrag in de natuurlijke situatie (Bellack, 1979; Bellack, Hersen, & Turner, 1978; Matson, Esveldt-Dawson, & Kazdin, 1983). De effectiviteit van de interventies in de studies van Lemanek en Gresham (1984), Lemanek, Williamson, Gresham en Jensen (1986) en Schloss, Smith en Schloss (1984) moet dan ook bekeken worden vanuit dit perspectief. Schloss, Smith en Schloss (1984) hebben echter ook data verzameld in een quasi natuurlijke situatie, het plaatselijke restaurant met onbekenden, om generalisatie van effect over situaties vast te kunnen stellen.

1.4.2.4 Het programmeren van strategieën voor gedragsverandering over verschillende condities

Stokes en Baer (1977) stelden een classificatie-systeem op waarbinnen negen categorieën kunnen worden onderscheiden voor bovenstaande strategieën. Dit gebeurde op basis van een review van 120 artikelen over toegepaste gedragsanalyse. Stokes en Osnes (1989) hebben het classificatie-systeem van Stokes en Baer (1977) verfijnd tot 12 strategieën, die onder te brengen zijn in 3 hoofdcategorieën. De volgende hoofdcategorieën en strategieën zijn te onderscheiden: *A. maak gebruik van aanwezige functionele contingenties*: (1) maak gebruik van natuurlijke consequenties, (2) recruteer natuurlijke consequenties, (3) wijzig onaangepaste consequenties, en (4) beloon het voorkomen van generalisatie; *B. train divers*: (1) maak gebruik van meerdere stimuli, (2) maak gebruik van meerdere responsen, (3) maak antecedenten minder discriminatief, en (4) maak consequenten minder discriminatief; en *C. maak gebruik van functionele mediatoren*: (1) fysieke stimuli, (2) sociale stimuli, (3) zelf-gemedieerde fysieke stimuli, en (4) zelf-gemedieerde verbale en zichtbare stimuli. Hoewel Stokes en Baer (1977) en Stokes en Osnes (1989) spreken van generalisatie strategieën, is het gebruik van de term generalisatie in strijd met de traditionele conceptualisatie van dit begrip (meerdere stimuli kunnen effectief zijn in de controle van een bepaald gedrag, alhoewel het gedrag onder controle is gebracht van maar één stimulus [Skinner, 1953]). Door gebruik te maken van bovenstaande strategieën wordt het gedrag onder controle gebracht van meerdere stimuli. Johnston (1979) stelde dat bovengenoemde strategieën een functie hebben in de gewenste gedragsverandering over verschillende condities middels het verkrijgen van controle over deze condities. Hij spreekt dan ook van "generality" in plaats van "generalization" (p. 3). In de hierboven besproken studies ter remediëring van tekorten in de sociale vaardigheden van auditief gehandicapten was alleen in de studie van Kreimeyer en Antia (1988) sprake van het actief programmeren van strategieën voor gedragsverandering over verschillende condities. In de andere studies werd generaliteit van trainingseffecten overgelaten aan het toeval.

1.4.3 Samenvatting

Procedures ter remediëring van tekorten in de sociale vaardigheden van auditief gehandicapten zijn in een zestal studies geëvalueerd. De effectiviteit van deze procedures werd vastgesteld. Vervolgens zijn deze studies bekeken vanuit een

aantal inzichten die binnen het wetenschappelijke gedragsonderzoek in belang toenemen. In 1991 besteedde het tijdschrift 'Journal of Applied Behavior Analysis' zelfs een speciale editie aan het concept 'sociale validiteit'. Dat er voortdurend nieuwe inzichten ontstaan met betrekking tot dataverzameling en generaliteit van resultaten over situaties en tijd is evident.

In de studies die in de volgende hoofdstukken gepresenteerd worden zijn bovenstaande inzichten toegepast. In het tweede hoofdstuk wordt een normatief vergelijkingsonderzoek gepresenteerd waarin, nadat op een sociaal valide wijze doelgedragingen gekozen en vervolgens geconcretiseerd zijn, voor een aantal gedragingen objectief vastgesteld is in welke mate de frequenties van voorkomen bij auditief gehandicapte kinderen met ernstige stoornissen in de taalverwerving (dyspractische, auditief gehandicapte kinderen) verschillen van horende leeftijdsgenoten. Dit onderzoek is uitgevoerd ter legitimering van remediëring van een aantal doelgedragingen middels het programma "Training van Sociale Vaardigheden".

In Hoofdstuk 3 worden de trainingsstudies gepresenteerd waarin de effectiviteit van bovengenoemd programma en het differentiële effect van de cognitieve mediatie component wordt vastgesteld bij auditief gehandicapte kinderen met (ernstige) taalverwervingsstoornissen in de leeftijdsgroep 6 tot 14 jaar. Voor auditief gehandicapte adolescenten met (ernstige) taalverwervingsstoornissen, leeftijd 14 jaar en ouder, is een ander, op zelfmanagement gebaseerd programma ontwikkeld. De effectiviteit van dit programma wordt in Hoofdstuk 4 voor beide groepen, auditief gehandicapte adolescenten met taalverwervingsstoornissen én auditief gehandicapte adolescenten met ernstige taalverwervingsstoornissen, vastgesteld. Hoofdstuk 5, tenslotte, bevat de algemene conclusies en aanbevelingen.

Hoofdstuk 2
Social Behaviors in Hearing and Hearing-Impaired Children: A Comparison

2.0 Summary

The purpose of the study in this chapter was to compare several social behaviors of hearing-impaired children and normal hearing children. The participants of this study were eleven hearing-impaired children and eleven normal hearing children with ages ranging from 4 years 9 months to 8 years 5 months. The hearing-impaired children were diagnosed as dysphatic with severe to profound hearing losses and communication with them was augmented by fingerspelling and written language. Target behaviors were turn waiting and initiating interaction during grammar lessons, and turn waiting and interacting with others during parcheesi. For both groups, data were collected during six grammar lessons and six parcheesi games, over a period of six weeks. Results suggest that hearing-impaired children with severe language disabilities, as compared to their hearing peers, show fewer instances of appropriate social behaviors and more instances of inappropriate social behaviors during grammar lessons. During parcheesi, there was only a difference between the two groups for turn waiting.

2.1 The study

During the last decades, a considerable amount of attention has been given to the social development of hearing-impaired persons. In particular, these studies have indicated a high incidence of emotional and behavioral problems (e.g., Freeman, Malkin, & Hastings, 1975; Meadow & Trybus, 1979; Vernon, 1969); deficits in empathy, communication, and social perception (e.g., Bachara, Raphael, & Phelan, 1980; Cates & Shontz, 1990; Odom, Blanton, & Laukhuf, 1973); and low self-esteem (e.g., Farrugia & Austin, 1980; Grimes & Prickett, 1988; Schlesinger & Meadow, 1972).

Delgado (1982), Hummel and Schirmer (1984), and Klansek-Kyllo and Rose (1985) have identified several problems with the studies of social development with

hearing-impaired persons First, most data have been derived from instruments that have been standardized on a hearing sample. The validity and reliability of these instruments are questionably when used with hearing-impaired persons. Consequently, there is a lack of valid and reliable normative data regarding hearing-impaired individuals. A second problem pertains to the subjective judgment regarding the appropriateness of behaviors. In other words, people may differ in their opinions about which behaviors are appropriate or inappropriate in a given situation. Third, social behaviors are obviously related to age, gender, ethnic status, socio-economic status, and geographic location (Foster & Ritchey, 1979). Specifically for hearing-impaired individuals, these behaviors are also related to the degree of hearing impairment, the degree of integration, the educational setting, the hearing status of parents, and additional handicaps Yeaton (1988) postulated that normative data need to be evaluated in the context in which it is embedded, otherwise interpretations are most likely to be erroneous. Fourth, Van Hasselt, Hersen, Whitehill, and Bellack (1979) contended that the selection of behaviors for remediation is based rather on prior hypotheses of researchers than on empirical evidence, only

A promising strategy to deal with the above-mentioned problems is the use of so called social validity procedures In the behavioral literature, social validity has become an important issue (e g , the second number of 1991, the *Journal of Applied Behavior Analysis* addressed a special issue to this issue). For the selection of target behaviors and the determination of the appropriateness of these behaviors, the most important question is that of social significance (Wolf, 1978) In other words, which social behaviors are relevant and which are the appropriate and inappropriate instances of these behaviors according to society. Van Houten (1979), Schwartz and Baer (1991), and Wolf (1978) argued that selection of the target behaviors and the definition of their appropriate and inappropriate instances should be based upon judgments by significant others in an individual's environment.

The next step is to legitimize the selection of the target behaviors using empirical evidence That is, comparing the social behaviors of hearing-impaired children and normal hearing children An objective and reliable procedure to determine the differences in performances may be the observation of the appropriate and

inappropriate instances of these behaviors in socially relevant interactional situations identified by significant others.

The purpose of this study was to compare four social behaviors of hearing-impaired children and normal hearing children using the above-mentioned procedures.

2.1.1 Method

2.1.1.1 Subjects and settings

The hearing-impaired group was composed of six boys and five girls with severe language disabilities. Their chronological ages ranged from 4 years and 9 months to 8 years and 5 months (M = 7; 1 years). They had severe to profound hearing losses (over 70 dB in the better ear across the frequencies of speech). They attended the school at a residential facility for the deaf and were enrolled in three different classes of three or four children each. Two girls and four boys resided in one living group at the institution. The remaining five children lived with their parents. All children communicated by fingerspelling and because they had difficulties in processing oral instructions, communication with them was augmented by fingerspelling and written language, also. These children had been selected because teachers and residential staff members indicated that this group of children lacked adequate social behaviors.

The hearing children were matched to the hearing-impaired children for age and gender. The chronological ages of the six boys and five girls ranged from 4 years and 9 months to 8 years and 5 months (M = 7; 1 years). They had hearing capacities within normal ranges. The children were drawn from two regular schools located in the same geographical region as the residential facility for the deaf.

The three teachers (two females and one male) for the hearing-impaired group were 33, 34, and 36 years old and they had been qualified teachers for over one decade. They had completed an in-service training. The two female teachers for the hearing group were 25 and 26 year old. They were certified teachers. For the hearing-impaired group, sessions were conducted in children's classrooms. For the hearing group, children were assigned to three groups according to their hearing-impaired counterparts' classroom assignment. The sessions were conducted in rooms in their

schools that were approximately similar to those of the hearing-impaired group' classrooms

2 1 1 2 Response definitions

In consultation with teachers of the residential school, four target behaviors were selected (a) turn waiting during grammar lessons, (b) initiating interaction during grammar lessons, (c) turn waiting during parcheesi (d) interacting with others during parcheesi Then, teachers of the residential school for the deaf and teachers of 16 regular schools in the same region were asked to fill out a questionnaire in order to define appropriate and inappropriate instances of the target behaviors Lastly, the experimenter compiled the list of appropriate and inappropriate instances of the target behaviors which had to be recorded

Appropriate instances of target behaviors during grammar lessons Turn waiting (a) The child draws a person's attention once or by continuously raising a hand and waits, (b) the child does not speak before another person is finished, and (c) the child's body is directed toward the speaker (i e , teacher, residential staff member, another child) and (s)he does not interrupt *Initiating interaction* The child (a) raises a hand, (b) calls a hearing person s name once or twice (e g , teacher or staff member), (c) touches a hearing or a deaf person once or twice, (d) taps on the desk once or twice, and (e) takes a stand in front of the teacher

Inappropriate instances of target behaviors during grammar lessons Turn waiting The child (a) starts speaking when another person is speaking, (b) interrupts when another person is on task, and (c) does not wait quietly for a turn if (s)he knows the answer to a question *Initiating interaction* The child (a) screams, (b) calls someone s name, touches someone, or taps on the desk more than twice, (c) strikes the desk, (d) is unauthorized out-of-seat, (e) flaps hands, (f) pulls someone's clothes, (g) points his/her finger at someone, and (h) shows aggressive behavior

Appropriate instances of target behaviors during parcheesi Turn waiting (a) The child's body is directed toward the game and (s)he waits for his/her turn and (b) the child asks if it is his/her turn once or twice *Interacting with others* The child shows one of the following behaviors (a) telling someone that it is his/her turn, (b) helping someone, (c) praising someone, and (d) comforting someone

Inappropriate instances of target behaviors during parcheesi. Turn waiting: The child (a) does not wait for his turn, (b) says it is his/her turn when it is not, and (c) touches game equipment when it is not his/her turn. *Interacting with others:* The child shows one of the following behaviors: (a) laughing at someone, (b) teasing someone, (c) excluding someone from the game, (d) showing aggressive behavior, and (e) making an inappropriate gesture (e.g., gives someone the thumps down).

2.1.1.3 Data collection and interobserver agreement

Data were collected during six 20-min grammar lessons and six 15-min parcheesi games, over a period of six weeks. Each recording session was videotaped. To reduce reactivity as to the presence of the camera, the first two recording sessions were omitted. Target behaviors were recorded using an 8-sec partial interval recording procedure by three primary observers using the HyperCard program for the Macintosh™computer. Observers recorded each target behavior simultaneously for two children. The sequence of observation of the children was counterbalanced each week.

Prior to formal data collection, the primary observers and the secondary observer had conducted several sessions to get acquainted with the response definitions and the recording procedures. Data collection did not begin until 90% interobserver agreement for the target behaviors had been attained during three consecutive sessions. As an attempt to control for observer drift and bias (Kazdin, 1977) the following measures were in effect: (a) primary observers were kept naive with respect to the experimental hypothesis; (b) preceding each recording session, observers read the response definitions; and (c) primary observers never received feedback on the reliability of their scoring.

In order to provide data on the integrity of the independent variable (Peterson, Homer, & Wunderlich, 1982), 50% of the recording sessions were analyzed with respect to the following: whether (a) duration of recording sessions for the hearing-impaired group and the hearing group were the same; (b) during grammar lessons the teachers divided their attention equally across the children of both groups; and (c) during parcheesi the teachers reacted identically to each quarrel for both groups. There were no differences in the duration of the recording sessions between the hearing-impaired group and the hearing group. For both groups, mean numbers of

recording intervals were 161 for grammar lessons and 121 for parcheesi. The Mann-Whitney *U*-test (Siegel, 1956), failed to reveal any significant differences between the hearing-impaired group and the hearing group with respect to the number of intervals that (a) each child received attention (p = .6242, 2-tailed) and (b) teachers reacted to quarrels (p = .7384, 2-tailed).

Reliability checks were conducted in 41% of the recording sessions and were equally distributed across the four target behaviors and across the two groups. Interobserver agreement was assessed on an interval-by-interval basis. A kappa statistic (Cohen, 1960) was computed to control for chance agreement. For turn waiting during grammar lessons, an average median of the kappa coefficient of .58 (range: .42 - .74) was found. For initiating interaction during grammar lessons, this statistic was .63 (range: .38 - .78). During parcheesi, the average median of the kappa coefficients were .60 (range: .33 - .75) and .62 (range: .30 - .100) for turn waiting and interacting with others, respectively.

2.1.2 Results

Percentages appropriate and inappropriate target behaviors were calculated by dividing the number of intervals of appropriate or inappropriate instances by the total number of intervals recorded and multiplied by 100. Figure 2.1 shows grand means and ranges of percentage appropriate and inappropriate target behaviors for both groups.

The grand mean percentages appropriate turn waiting during grammar lessons were 65.2 for the hearing-impaired group and 83.5 for the hearing group. For inappropriate turn waiting during grammar lessons, grand mean percentages were 17.9 and 9.7 for the hearing-impaired group and the hearing group, respectively. As for initiating interaction during grammar lessons, grand mean percentages appropriate instances were 6.4 and 13.4 and grand mean percentages inappropriate instances were 19.3 and 13.0 for the hearing-impaired group and the hearing group, respectively.

During parcheesi, the grand mean percentages appropriate turn waiting were 60.0 for the hearing-impaired group and 75.6 for the hearing group. For inappropriate turn waiting during parcheesi, grand mean percentages were 2.1 for both groups.

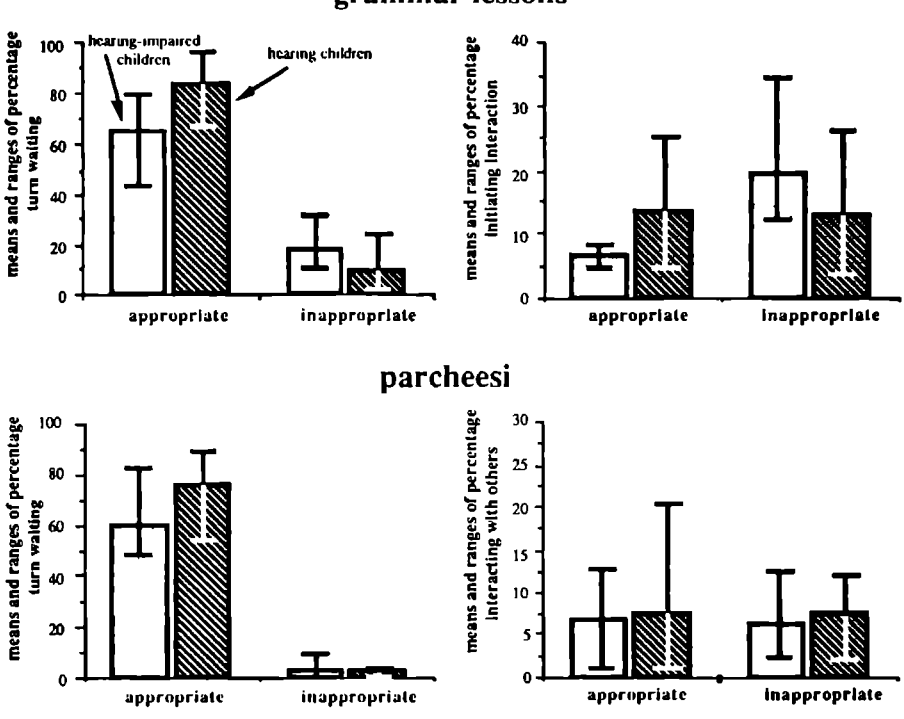

Figure 2.1 The upper part of the figure shows means and ranges of percentages of intervals appropriate and inappropriate turn waiting and initiating interaction observed during grammar lessons per 20 min. The lower part of the figure shows means and ranges of percentages of intervals appropriate and inappropriate turn waiting and interacting with others observed during parcheesi per 15 min.

The grand mean percentages appropriate interacting with others were 6.5 and 7.3 for the hearing-impaired group and the hearing group, respectively. As for inappropriate interacting with others during parcheesi, these percentages were 6.1 for the hearing-impaired group and 7.3 for the hearing group.

Wilcoxon Signed Rank test (Siegel, 1956) revealed statistically significant differences (1-tailed) between the hearing-impaired and the hearing group for appropriate turn waiting during grammar lessons (z = 2.847; N= 11; p= .002), for inappropriate turn waiting during grammar lessons (z = 2.578; N= 11; p= .004), for appropriate initiating interaction during grammar lessons (z = 2.312; N= 11; p= .010), for inappropriate initiating interaction during grammar lessons (z = 1.6;

N= 11, p= 054), and for appropriate turn waiting during parcheesi (z = 2 578; N= 11; p= .004).

2.1.3 Discussion

The results of the present study suggest that hearing-impaired children with severe language disabilities, as compared to their hearing peers, show fewer instances of appropriate social behaviors and more instances of inappropriate social behaviors during grammar lessons. During parcheesi, there is only a significant difference for appropriate turn waiting. The hearing-impaired group shows fewer instances of appropriate turn waiting.

An explanation of the differences between the results during grammar lessons and during parcheesi might be that the rules of parcheesi are clear, whereas during grammar lessons the rules of the teachers are not Because hearing-impaired children tend to be more teacher-directed than hearing children (Antia, 1982), the unclear rules of teachers during grammar lessons may have effected hearing-impaired children's performance. A striking finding is that the hearing-impaired group's mean numbers of interacting with others during parcheesi are approximately identical to the hearing group's mean numbers. This might be attributed to the fact that teachers did not interact with the children during parcheesi. Shores, Hester, and Strain (1976) have shown that the amount of teacher-child interaction tend to correlate negatively with the amount of child-child interaction during free-play

The present study confirms previous findings concerning the incidence of behavior problems in hearing-impaired individuals (e g , Freeman, Malkin, & Hastings, 1975, Meadow & Trybus, 1979, Vernon, 1969) The present study also extends previous findings because data were assessed using observations in natural settings, whereas the assessment in the previous studies predominantly relied on the use of questionnaires.

However, there are several limitations that may potentially confound our conclusions. First, the present study involved a sample of only 22 children. Therefore, generality of the findings may be limited to persons who share these characteristics of age, hearing impairment, language disabilities, and educational

setting. Second, children were matched according to their age and gender, only. Future research also should incorporate ethnic status, intelligence, and socio-economic status of parents as matching variables. Third, for the twelve sessions (i.e., six grammar lessons and six parcheesi games), the hearing children were assigned to three groups according to their hearing-impaired counterparts' classroom assignment and were placed in rooms in their schools that were approximately similar to the hearing-impaired group' classrooms. The latter measures may have jeopardized this equivalence because of novelty of the setting to the hearing children. Lastly, we failed to identify the instances of the target behaviors that account for the differences between the performances of the hearing and the hearing-impaired group. Therefore, it is not possible to mark the differences between the performances of the hearing and the hearing-impaired group either as qualitatively or as quantitatively However, anecdotal information suggests that differences in initiating interaction were mainly qualitative. The hearing children initiated interaction mostly by calling a person's name, whereas the hearing-impaired children initiated interaction mostly by tapping on their desks. This information is consistent with the findings by Vandell and George's (1981). Clearly, future research should take into regard this issue.

Despite these limitations, this study is of significance for the following reasons. First and foremost, we assessed the data in the context in which it is embedded. The social significance of the behaviors involved is based upon judgements by the teachers of both hearing and hearing-impaired children. The teachers of the hearing-impaired children selected the target behaviors and all teachers, that is, the teachers of the hearing-impaired children and the teachers of the normal hearing children, defined the appropriate and inappropriate instances. Second, we used an objective procedure to collect data in two natural settings In conclusion, the data derived from this study were found to be reliable

For training purposes, the present procedure may be a viable method to (a) identify behaviors that are in need for training and (b) determine whether children, individually or as a group, are in need for training of social behaviors.

Hoofdstuk 3
Training of social behaviors with language-disabled deaf children

3.0 Summary

This chapter presents three studies in which the effects of a multifaceted training procedure are assessed on the acquisition and generalization of social behaviors with (severely) language-disabled deaf children The training package included child training, using behavior modification and cognitive mediation procedures, and mediator training, using organizational behavioral management procedures. The package included procedures to promote generality of effects and the social validity of the procedures as well. Data were collected within a multiple baseline design across behaviors. For the third study, data were collected using a combination of a multiple baseline design across behaviors and an inverted design. Target behaviors were recorded in several natural settings, during several activities, and across several persons

The participants of the first study were nine language-disabled deaf children with ages ranging from 8 years to 9 years 6 months They were diagnosed as dysphatic with severe to profound hearing losses and their oral communication was supplemented by an oral-graphic method The participants all attended a school at a residential facility for the deaf The target behaviors, which were selected by teachers and residential staff members, were turn waiting, initiating interaction, and interacting with others Results showed a functional relationship between introduction of the training procedure and increases in percentage of appropriate target behaviors for all nine children The effects were maintained throughout a five-to-ten week follow-up period

The participants of the second study were nine language-disabled deaf children with ages ranging from 12 years 1 month to 13 years 5 months These children shared the characteristics of hearing impairment, communication, and educational setting with the children of the first study The target behaviors were also identical to those of the first study In contrast with the first study (a) the ages of the participants were different, (b) the training procedure was modified, and (c) training of the three

aforementioned social behaviors was arranged in a different order. For all nine children visual inspection and statistical analysis indicated that target behaviors increased and generalized across settings, activities, and persons when the training procedure was in effect. Maintenance of effect was demonstrated as well.

The purpose of the third study was to assess the effectiveness of the multifaceted training procedure on the acquisition and generalization of social behaviors and the relative contribution of the cognitive mediation component of the training package. Twenty deaf children with severe language disabilities and ages ranging from 7 years 11 months to 13 years 9 months, participated. They shared the characteristics of hearing impairment and educational setting with the children of the two previous studies. Communication with them was augmented by fingerspelling and written language. Target behaviors were greeting, turn waiting, initiating interaction, and giving help. Results showed that the training package was effective in increasing the percentages of appropriate target behaviors. The cognitive mediation component, however, failed to differentially influence the effects. Maintenance of effects was demonstrated as well.

3.1 Effects of a multifaceted training procedure on the acquisition and generalization of social behaviors in language-disabled deaf children[1]

During the past two decades, integration of hearing-impaired persons into the community has received high priority. Successful integration depends on both normal hearing individuals' acceptance of hearing-impaired persons and hearing-impaired persons' ability to interact effectively with normal hearing persons. A number of studies have documented deficits in the social development of hearing-impaired persons. Frequently reported are deficits in empathy (Bachara, Raphael, & Phelan, 1980), communication (Klansek-Kyllo & Rose, 1985), and social perception (Odom, Blanton, & Laukhuf, 1973). Furthermore, the behavior of hearing-impaired persons has been characterized as impulsive, egocentric, and rigid (Meadow, 1976). The prevalence of emotional and behavioral problems in hearing-impaired children has also been estimated to be three-to-six times higher than in

[1]This study has been published: Rasing E. J. & Duker P. C. (1992a). Effects of a multifaceted training procedure on the acquisition and generalization of social behaviors in language-disabled deaf children. *Journal of Applied Behavior Analysis*, *25* , 723-734

normal hearing children (Meadow & Schlesinger, 1971; Meadow & Trybus, 1979). Deficits, characteristic features, and emotional and behavioral problems have been attributed to sensory and social deprivation (e.g., Brice, 1985; Evans, 1975; Harris, 1978; Meadow, 1968, 1976). Meadow (1980) contended that social-emotional problems are due to early language deprivation rather than to deafness.

Training of social behaviors as remediation has been conducted with a variety of client populations, including psychiatric adults (e.g., Eisler, Hersen, & Miller, 1974), emotionally disturbed children (e.g., Amish, Gesten, Smith, Clark, & Stark, 1988; Baum, Clark, McCarthy, Sandler, & Carpenter, 1986), learning-disabled children (e.g., Berler, Gross, & Drabman, 1982; Blackbourn, 1989; Gresham & Reschly, 1986; Zigmond & Brownlee, 1980), mentally retarded individuals (e.g., Bates, 1980; Matson & Adkins, 1980; Matson & Andrasik, 1982), autistic individuals (e.g., Mesibov, 1984), blind individuals (e.g., Ammerman, Van Hasselt, Hersen, & Moore, 1989; Van Hasselt, Hersen, Kazdin, Simon, & Mastanuono, 1983), and socially withdrawn children (e.g., Gresham & Evans, 1987; Kratochwill & French, 1984). Various strategies have been used to improve social behaviors, including instruction, modeling, group discussion, role-playing, behavior rehearsal, coaching, feedback, homework, and positive reinforcement.

Although much attention has been given to social deficits of hearing-impaired persons, few studies have been conducted to evaluate procedures to remediate these deficits. Barton and Osborn (1978) used positive practice to increase sharing with five hearing-impaired children. Sharing toys increased with all five children. Treatment effects generalized to a new teacher, new toys, and to a class with untrained children. Lemanek and Gresham (1984) assessed the effects of a training package (i.e., instruction, live modeling, behavior rehearsal, feedback, and social reinforcement) on specific aspects of social interaction behaviors of a 17-year-old deaf female. Speech duration and appropriate content of speech increased, and response latency, that is, amount of time between termination of a prompt and individual's initiation of responding, decreased during training scenes. Although speech duration increased and response latency decreased during generalization scenes when training was in effect, level of responding returned to baseline during follow-up. Lemanek, Williamson, Gresham, and Jensen (1986) replicated this

study with four hearing-impaired individuals ranging from 11 to 18 years of age. All four individuals increased their speech duration and content during role-play scenes. Two individuals also decreased their response latency during these scenes. Treatment effects generalized to novel role-play scenes and to an analogue situation. Schloss, Smith, and Schloss (1984) used a combination of a card game, modeling, behavior rehearsal, feedback, and reinforcement with four 17- and 18-year old hearing-impaired students to increase their asking questions, criticizing a product or a service, responding to small talk, and reacting to suggestive selling. The training package was effective in increasing the social behaviors of the four students during role-play scenes, and treatment effects generalized to untrained role-play scenes and to a natural setting (viz., the local restaurant). Finally, Kreimeyer and Antia (1988) assessed the effectiveness of a training package that included modeling, physical and verbal prompting, and two generalization strategies (i.e., programing common stimuli and training sufficient exemplars, Stokes & Baer, 1977) on sharing, conversation, and positive interaction with preschool hearing-impaired children during instructor-directed intervention and in an untrained free-play setting. The effectiveness was demonstrated during instructor-directed intervention. Generalization to free-play settings only occurred when the above-mentioned generalization strategies were used.

Although these studies demonstrated successful interventions, several issues are noteworthy. First, from a social validity perspective, target behaviors and their appropriate and inappropriate instances should be selected and defined by important social agents of the participants (Wolf, 1978). Lemanek and Gresham (1984) and Lemanek, Williamson, Gresham, and Jensen (1986) used baseline performance on the Social Skills Test for Children (SST-C; Williamson, Moody, Granberry, Lethermon, & Blouin, 1983) to select target behaviors for training. The appropriateness of the target behaviors was based on criteria obtained from hearing children. The other three aforementioned studies did not report how and by whom the target behaviors were selected. As for the appropriateness of the target behaviors, Schloss, Smith, and Schloss (1984) asked managers of eight businesses to write the most appropriate response to each situation of the 16-item situation role-play. Second, socially relevant interactional situations in natural settings should be selected for the assessment of treatment effects in order to determine the clinical significance of these effects. In the above-mentioned studies, only Barton and

Osborn (1978) and Kreimeyer and Antia (1988) selected a socially relevant interactional situation in a natural setting (i.e., free-play in the classroom) for the assessment of treatment effects. Lemanek and Gresham (1984), Lemanek, Williamson, Gresham, and Jensen (1986), and Schloss, Smith, and Schloss (1984) used role-play situations for the assessment of treatment effects. However, role-play assessments of social behavior may have limited generalizability to natural settings (Bellack, 1979; Bellack, Hersen, & Turner, 1978). Schloss, Smith, and Schloss (1984) also conducted assessments at a local restaurant to determine generalization of treatment effects. Third, to promote generality of effects, generalization strategies as proposed by Stokes and Osnes (1989) should be a part of any treatment for establishing social behaviors. Although all studies reported generalization of treatment effects across a variety of stimuli, generalization was not actively programmed in these studies except by Kreimeyer and Antia (1988). Generalization was considered something that would occur automatically or would not occur at all.

The present study assessed the effectiveness of a multifaceted training procedure on the acquisition and generalization of three social behaviors with nine language-disabled deaf children. The training procedure consisted of (a) child training and (b) teachers and residential staff-directed supervision, feedback, and goal-setting. Because language-disabled deaf children were involved, many visual aids were incorporated in the child training component of the procedure. The following procedures were in effect to promote generality of effects. First, the target behaviors and the appropriate and inappropriate instances of these target behaviors were selected by teachers and residential staff. Therefore, these behaviors were presumed to have contact with natural consequences which may maintain them. Second, training was conducted by teachers and residential staff, in various natural environments and during various activities. Third, teachers and residential staff were asked to socially reinforce appropriate instances of the target behaviors. Fourth, tokens were provided on a thinning schedule of reinforcement for appropriate instances of the target behaviors. Fifth, teachers and residential staff were asked to correct inappropriate instances of the target behaviors. Sixth, teachers and residential staff were prompted to use the same training procedures when children showed appropriate or inappropriate instances of the target behaviors. Finally, materials to cue the children to emit the target behaviors were present in all

relevant settings As an index of social validity, teachers and residential staff identified and selected the target behaviors and defined the appropriate and inappropriate instances of the target behaviors They were also informed about the training procedures on a regular basis prior to administering these procedures.

3.1.1 Method

3 1.1.1 Subjects and settings

Nine language-disabled deaf children attending the school of a residential facility for the deaf participated Participants were selected on the basis of their age and their behavioral problems as indicated by their teachers and residential staff members. The six girls and three boys were enrolled in two different classes. Class 1 contained four girls and one boy Class 2 contained two girls and two boys The children of Class 1 and one boy of Class 2 constituted one living group at the institution. The remaining three children lived with their parents The children, with ages ranging from 8 years to 9 years 6 months (M = 8 years 6 months), were diagnosed as dysphatic with severe to profound hearing losses Their oral communication was supplemented by an oral-graphic method. Children's vocabulary age (PPVT) ranged from 2 years 5 months to 4 years 3 months (M = 2 years 11 months)

The ages of the two consulting teachers (one female and one male) were 46 and 28, and they had been qualified teachers for 19 and 6 years, respectively. The chronological ages of the three female residential staff members involved were 36, 26, and 24. They were certified for 19, 2, and 1 year(s), respectively. The female psychologist was 33 years old and was certified for 3 years Teachers, residential staff, and the psychologist had completed an in-service training

3.1 1 2 Response definitions

Ten behaviors were identified by consulting teachers and residential staff Teachers and residential staff were asked to select three target behaviors and to define appropriate and inappropriate instances of these target behaviors The following three behaviors were selected (a) turn waiting, (b) initiating interaction, and (c) interacting with others.

The following instances of target behaviors were recorded.
Appropriate instances of target behaviors. Turn waiting was defined as: While the child's body is directed toward the person involved (i.e., the teacher, a residential staff member, another child), the child asks a person's attention once, but does not interrupt others and waits; the child does not speak before another person is finished. *Initiating interaction* referred to the child seeking a person's attention by (a) raising a hand, (b) calling once or twice a hearing person's name (e.g., the teacher or residential staff member), and (c) touching once or twice a hearing or a deaf person (e.g., the teacher or another child). *Interacting with others* was defined as the child showing one of the following behaviors: (a) helping someone; (b) comforting someone; (c) telling someone (s)he is kind, funny, or pleasant; and (d) telling someone (s)he has done something well.

Inappropriate instances of target behaviors. Turn waiting was defined as: Child starts speaking when another person is speaking; child interrupts when another person is on-task. *Initiating interaction* referred to the child seeking a person's attention by showing one or more of the following behaviors: (a) screaming, (b) tapping on the desk, (c) hand flapping, (d) unauthorized out-of-seat, (e) hitting a person, and (f) calling a person's name or touching a person more than twice. *Interacting with others* was defined as the child showing one of the following behaviors: (a) laughing at someone, (b) teasing someone, (c) excluding someone from social activities, (d) sticking out the tongue, and (e) making an inappropriate gesture (e.g., pointing at one's forehead).

3.1.1.3 Data collection and interobserver agreement
Target behaviors were recorded using an 8-sec partial interval recording procedure. Teachers and residential staff were asked to identify socially relevant interactional situations for recording the target behaviors. Accordingly, turn waiting was recorded in the classroom during grammar lessons. Initiating interaction was recorded when manual training was practiced and in the children's dayroom during dinner. Interacting with others was recorded when manual training was practiced. Each recording sessions lasted 20 min and was videotaped. To reduce reactivity, the camera (i.e., a Sony®CCD-V90E) was present in each of the three settings for two weeks prior to baseline recordings.

Data were collected by two primary observers using the HyperCard program for the Macintosh™computer. Data collection did not begin until 90% interobserver agreement for the target behaviors had been attained during three consecutive sessions. As an attempt to control for observer drift and bias (Kazdin, 1977a) the following measures were taken: (a) primary observers were kept naive with respect to the experimental hypothesis; (b) primary observers were uninformed as to which experimental phase was in effect at a given point of time; (c) preceding each recording session, observers read the response definitions; and (d) primary observers never received feedback on the reliability of their scoring.

Interobserver agreement was assessed on an interval-by-interval basis. Reliability checks were conducted in 27% of the recording sessions and were approximately equally distributed across the three target behaviors and across the experimental phases. A kappa statistic (Cohen, 1960) was computed to control for chance agreement. For turn waiting, an average kappa coefficient of .83 (range: .65 - 1.00) was found. For initiating interaction and for interacting with others, the average kappa coefficients were .82 (range: .75 - .94) and .73 (range: .41- .87), respectively.

3.1.1.4 Experimental design

A multiple baseline design across the three target behaviors was employed to assess the functional relationship between training and changes in the frequencies of the three target behaviors. Preceding data collection, teachers, residential staff, and parents had been informed about which target behaviors were selected for training, in order to assess the differential effectiveness of training these behaviors.

3.1.1.5 Procedure

Baseline. This phase was in effect during five weeks for turn waiting, ten weeks for initiating interaction, and fifteen weeks for interacting with others. For Class 1, turn waiting was recorded during 5 sessions, initiating interaction was recorded during 6 sessions, and interacting with others was recorded during 9 sessions. For Class 2, the number of recording sessions was 5, 8, and 11 for turn waiting, initiating interaction, and interacting with others, respectively. Preceding training of the first target behavior, the first author informed teachers and residential staff about the training procedures to be used. One week preceding training of each target

behavior, the first author handed teachers and residential staff (a) the lessons on the target behavior in training, (b) the list of appropriate and inappropriate instances of the target behavior, and (c) the materials to be used when the children showed appropriate or inappropriate instances of the target behavior

Training This phase was in effect during five weeks for each target behavior For both classes, turn waiting was recorded during 5 sessions and initiating interaction was recorded during 3 sessions Interacting with others was recorded during 2 and 4 sessions for Class 1 and Class 2, respectively The list of appropriate and inappropriate instances of the target behavior was posted in front of the classroom and on the living group The procedure consisted of *child training* and *teachers and residential staff directed supervision, feedback, and goal setting*

Child training consisted of (a) nine, 30-min lessons given by the teacher, (b) contingent reinforcement for each appropriate instance of the target behavior; and (c) a correction procedure to be used for each occurrence of an inappropriate instance of the target behavior The teacher and residential staff provided the children with contingent reinforcement, and administered the correction procedure during school hours and when the children were on the living group

First, during the first three lessons, given in the first week, the teacher prompted the children to emit (a) appropriate and inappropriate instances of the target behavior in training, and (b) examples of situations in which the target behavior might occur Furthermore, the teacher provided the children with verbal and modeled instruction about the consequences of showing the appropriate and inappropriate instances of the target behavior That is, the teacher practiced the reinforcement procedure and the correction procedure with the children during two or three role-plays Following these lessons, six problem-solving lessons were given within a period of four weeks During each two successive problem-solving lessons, the children watched a videotape showing a model (i e , a hearing child of their chronological age, demonstrating one particular appropriate instance of the target behavior) The videotape was displayed until the target behavior occurred The teacher then prompted the children to discuss the event on the videotape using the following four questions (a) What is the problem? (b) How can I handle it? (c) How should I respond to it? and (d) Did I choose a correct response? Drawings on the children's

worksheets visualized these four questions. The teacher instructed one or two children to role-play their responses to the third question, and following this, the teacher asked the remaining children whether it was an appropriate response or not. Finally, the children watched the appropriate example of the model on videotape and selected the most appropriate response.

Second, when a child showed appropriate instances of the target behavior during school hours or on the living group, the teacher or residential staff member provided him or her with verbal praise and a stamp token. Tokens were provided on the basis of child performance rather than on group performance. During school hours, 10 tokens could be exchanged for objects (e.g., crayons). When the children were on the living group, a group contingency was in effect; 30 tokens could be exchanged for special group activities (e.g., baking pancakes). Teachers and residential staff were prompted to deliver the tokens on a variable schedule in such a way that deliverance would not interfere with regular activities. To accomplish maintenance of training effects (Kazdin, 1977b, 1982; Stokes & Osnes, 1989), the schedule of reinforcement was gradually thinned from CRF to VR-5. For this purpose, teachers and residential staff were handed a diagram of the percentages appropriate target behavior that needed to be reinforced with tokens each day.

The third component of child training consisted of correcting the children for inappropriate instances of the target behavior. When a child showed an inappropriate instance of the target behavior during school hours or on the living group, the teacher or residential staff member gave the child a booklet with drawings of the four above-mentioned questions. The teacher or residential staff member instructed the child to look at these. For the convenience of teachers or residential staff, correction could also consist of pointing to a poster with the drawings of the questions and instructing the child to look at these.

Supervision, feedback, and goal-setting consisted of two components. First, the psychologist supervised each of the teachers while teaching the lessons and provided them with feedback. For this purpose, the psychologist attended one lesson each week and provided the teacher with verbal performance feedback during a weekly 15-min meeting. Second, the psychologist observed and provided feedback to teachers and residential staff regarding their administration of

reinforcement and correction. During the first week of training, the first author videotaped teachers' and residential staff's behavior while interacting with the children for 20 min. Each of the teachers or residential staff members then watched the videotape with the psychologist prompting him/her to reinforce and correct target behaviors appropriately. Hereafter, the psychologist prompted teachers and residential staff to attain a goal (i.e., goal-setting), set at 80% correct responses to children's appropriate and inappropriate instances of the target behavior. During the second through the fifth week, the psychologist was present in the classrooms and on the living group for 30 min each week, and recorded teachers' and residential staff's correct and incorrect responses to appropriate and inappropriate instances of the target behavior. During weekly 15-min meetings, the psychologist provided each teacher and residential staff member feedback using a graph of the percentage correct responding to the target behavior. When teachers and residential staff members met or exceeded the goal, the psychologist praised them and increased the goal for next week 15 to 20%. When they failed to meet the goal, the psychologist prompted them to attain the previous goal next week.

Follow-up. During this phase formal training was discontinued; however, teachers and residential staff were prompted by the first author to continue praising appropriate instances of the target behaviors and to remind the children of the appropriate instances when they showed inappropriate instances of the target behaviors. Furthermore, the lists of appropriate and inappropriate instances of the target behavior, the booklets, and the posters remained in place.

Follow-up was in effect during ten weeks for turn waiting and five weeks for initiating interaction. Due to the end of the school year, there was no follow-up phase for interacting with others. Turn waiting was recorded during 5 and 6 sessions for Class 1 and Class 2, respectively. Initiating interaction was recorded during 3 sessions for Class 1 and during 4 sessions for Class 2.

3.1.2 Results

The mean percentages of intervals of appropriate and inappropriate instances of the target behaviors observed during the experimental conditions are presented in Figures 3.1 and 3.2 for Class 1 and Class 2, respectively.

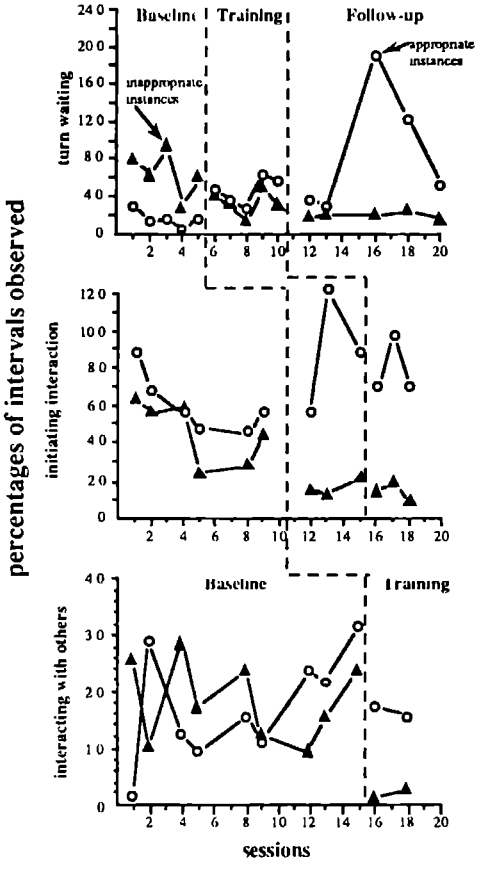

Figure 3.1 Percentages of intervals turn waiting observed during grammar lessons and percentages of intervals initiating interaction and interacting with others observed during manual training per 20 min in the three experimental conditions for Class 1

Figure 3.1 shows that the children of Class 1 engaged in more appropriate instances of turn waiting and initiating interaction and fewer inappropriate instances of all three target behaviors during training as compared with baseline. The mean percentages of intervals of appropriate instances of interacting with others remained at baseline level during training. The mean percentages of intervals of appropriate instances of turn waiting increased from 1.7 during baseline to 4.6 during training, and the mean percentages of intervals of inappropriate instances decreased from 6.6 during baseline to 3.4 during training. The mean percentages of intervals of

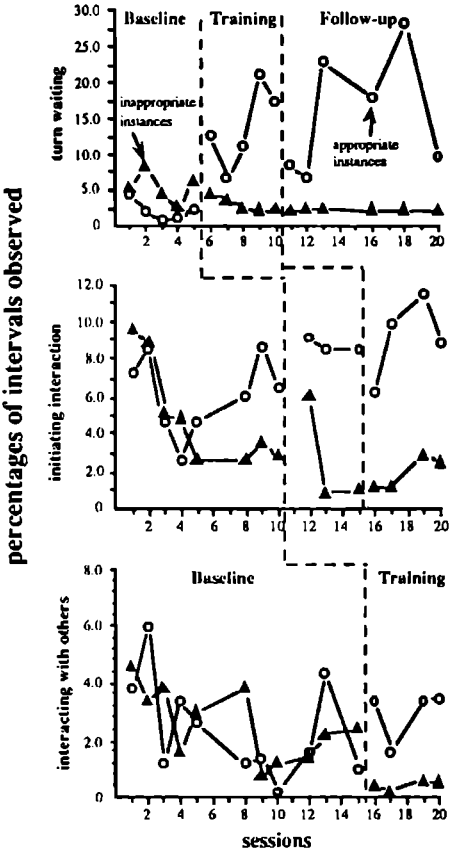

Figure 3.2 Percentages of intervals turn waiting observed during grammar lessons and percentages of intervals initiating interaction and interacting with others observed during manual training per 20 min in the three experimental conditions for Class 2.

appropriate instances of initiating interaction increased from 5.9 during baseline to 8.7 during training, and the percentages of intervals of inappropriate instances decreased from a mean of 4.5 during baseline to 1.5 during training. The mean percentages of intervals of appropriate instances of interacting with others was 1.8 during baseline and 1.7 during training, and the mean percentages of intervals of inappropriate instances was 1.9 during baseline and 0.2 during training. Figure 3.1 also shows that during follow-up the mean percentages of intervals of inappropriate instances of turn waiting further decreased to 2.0, whereas the mean percentages of

intervals of appropriate instances of turn waiting and initiating interaction remained above baseline level, that is, 8.6 and 7.8, respectively.

Figure 3.2 shows the data for the children of Class 2. As can be seen, there was a large increase in the mean percentages of intervals of appropriate instances of turn waiting, from 2.0 during baseline to 13.8 during training. The mean percentages of intervals of inappropriate instances of turn waiting decreased from 5.4 to 3.0 during training as compared with baseline and remained below the baseline level during follow-up (M = 2.1). The children also showed more appropriate instances of initiating interaction during training. Mean percentages of intervals of appropriate initiating interaction during baseline and training was 6.1 and 8.6, respectively. The mean percentages of intervals of inappropriate instances of initiating interaction decreased from 5.0 to 2.6 during training and remained at training level during follow-up (M = 1.9). Mean percentages of intervals of appropriate instances of interacting with others remained at baseline level during training whereas mean percentages of intervals of inappropriate instances decreased from 2.6 during baseline to 0.4 during training for the children of Class 2.

Within each experimental condition, the children showed much variation in the frequency of occurrence of the target behaviors. Although the frequency of occurrence of the target behaviors is an important feature from a social validity perspective, a more important parameter is the number of appropriate instances of the target behavior as related to the number of inappropriate instances. For this purpose the percentages of intervals of appropriate instances of the target behavior were divided by the total percentages of intervals of appropriate and inappropriate instances of the target behavior and multiplied by 100.

Table 3.1 shows the mean percentages appropriate target behaviors in the conditions of baseline, training, and follow-up for the nine children. For all nine children, mean percentage of appropriate turn waiting, appropriate initiating interaction, and appropriate interacting with others increased as a function of the training. For four children (i.e., Anita, Tom, Ellen, Vincent), mean percentage of appropriate turn waiting continued to increase during follow-up as compared to the training condition. During follow-up, the mean percentage of appropriate initiating

Table 3 1

Mean Percentage of Appropriate Target Behaviors during the Conditions of Baseline, Training, and Follow-up for the Nine Children

	Turn Waiting			Initiation Interaction			Interacting with others	
Child	BSLN	TX	F-up	BSLN	TX	F-up	BSLN	TX
				Class 1				
Jacqueline	27 9	62 8	61 6	64 5	94 4	93 3	58 3	100
Anita	21 8	62 0	90 1	70 0	91 7	90 3	41 0	92 9
Tom	13 4	40 9	68 4	51 1	72 0	85 8	34 3	87 5
Susan	21 7	63 4	54 9	53 3	87 7	79 8	51 0	100
Ellen	8 3	50 6	85 6	62 1	79 5	90 9	57 8	100
Mean	19 9	56 0	72 7	59 4	85 6	87 7	48 4	96 1
				Class 2				
Vincent	19 2	74 6	93 8	53 0	89 8	89 2	40 5	100
Norbert	34 2	64 9	66 5	45 4	85 5	72 4	39 7	100
Wanda	16 1	82 2	85 2	59 5	92 8	76 9	50 2	90 0
Maria	27 7	82 7	81 6	70 9	95 6	91 3	53 7	77 5
Mean	24 3	77 4	81 2	58 0	90 9	81 7	46 4	88 9
				Living Group				
Jacqueline				38 1	76 6	80 4		
Anita				48 3	88 3	91 7		
Tom				33 4	85 2	78 3		
Susan				29 8	68 8	83 3		
Ellen				31 8	83 3	76 7		
Vincent				31 7	77 1	63 0		
Mean				34 6	77 3	79 1		

Note BSLN = Baseline, TX = Training F up = Follow-up

interaction remained at training level for the children of Class 1 and remained above baseline level for the children of Class 2.

3.1.3 Discussion

The present study showed that a multifaceted training procedure supplemented with procedures to promote generalization resulted in the increase and generalization of social behaviors with language-disabled deaf children As a result of the training, all nine deaf children increased their percentage of appropriate turn waiting, appropriate initiating interaction, and appropriate interacting with others. Maintenance of training effects was demonstrated for turn waiting and initiating

interaction For four children, the percentage of appropriate turn waiting continued to increase during follow-up We believe that maintenance of effects during follow-up was due to the inclusion of several generalization strategies. More specifically, conducting training in various settings brought children into contact with the natural consequences of their acquired behaviors, while tokens were faded on a thinning schedule of reinforcement Recordings were conducted in several natural settings (i.e., classroom, manual training room, and children's dayroom), during several activities (i.e., grammar lessons, manual training, and dinner), and across several persons (i e., teachers, manual training teacher, and residential staff members)

Although the results of the present study suggest the training was effective, certain qualifications should be made First, the children showed much variation in the frequency of performing the target behaviors within each experimental condition. This variation may be attributed to several variables, such as, task difficulty, task interest, teaching style, and number of occasions for performing the target behaviors. Such influences cannot be excluded in natural settings, but we do not believe they jeopardize the internal validity of the conclusions For the target behaviors of the present study, the most important parameter defining whether a child is socially adaptive is the appropriateness of the performance when a child has to show the target behavior Although a social validity perspective states that frequency of occurrence of the target behavior is important, a criterion frequency for many target behaviors cannot be set for a specific activity in a specific setting. Second, another possible threat to the internal validity of this study might be the increase of percentage of appropriate initiating interactions when training of turn waiting was in effect for Class 2 This result might be attributed to the teacher's difficulty to inhibit the use of the training strategies for this target behavior. Another explanation might be that the target behaviors are interdependent We do not think, however, that the target behaviors involved are interdependent since there were no increases in percentage of appropriate initiating interactions when training of turn waiting was in effect for Class 1 and for the living group Third, no data were collected with respect to the integrity of the independent variable Peterson, Homer, and Wonderlich (1982) stated that an accurate description and a reliable observation of the independent variable and the dependent variable are equally important for demonstrating a functional relationship Our failure to collect data in this respect might indeed threaten internal validity However, the application of the training

procedures by the children's treatment agents was monitored by the psychologist, offering substantial safeguards against violation of accuracy in administering the independent variables. It is obvious, however, that reinforcement of appropriate instances and correction of inappropriate instances of the target behavior in the natural settings may not have concurred according to the first author's plan. To the extent there had been some amount of freedom in the application of the training procedures, this affirmed a robust functional relationship between the independent and dependent variable. Fourth, although no formal assessment of social validity was conducted (e.g., by having teachers and residential staff members fill out a questionnaire), we believe social validity was enhanced insofar as important social agents of the participants (a) selected the target behaviors, (b) defined the appropriate and inappropriate instances of the target behaviors, (c) selected socially relevant situations for data collection, and (d) were informed about the training procedures prior to administering these procedures. Furthermore, teachers and residential staff requested continuation of training of social behaviors for their children.

In summary, this study showed the effectiveness of a multifaceted training procedure in improving social behaviors with language-disabled deaf children. Although the number of language-disabled deaf children involved was relatively small, we believe the procedures can be used to improve social behaviors with other groups of children in other settings. Future research is needed to analyze the relative contributions of each component of the training procedure. In order to demonstrate external validity of the training procedure, replications should be conducted with other populations, particularly with hearing impaired children and adolescents, in other settings (e.g., settings in which children with hearing impairments are integrated with normal-hearing peers) and with other social behaviors.

3.2 Acquisition and generalization of social behaviors in language-disabled deaf children[2]

Training of social behaviors has been conducted to remediate social deficits with a variety of populations such as psychiatric adults (e.g., Eisler, Hersen, & Miller, 1974), emotionally disturbed children (e.g., Amish, Gesten, Smith, Clark, & Stark, 1988), emotionally-disordered adolescents (e.g., Plienis, Hansen, Ford, Smith Jr., Stark, & Kelly, 1987), learning-disabled children (e.g., Berler, Gross, & Drabman, 1982), mentally retarded individuals (e.g., Bates, 1980), autistic individuals (e.g., Mesibov, 1984), visual-impaired individuals (e.g., Ammerman, Van Hasselt, Hersen, & Moore, 1989; Sacks & Gaylord-Ross, 1989), and socially withdrawn children (e.g., Gresham & Evans, 1987). Training procedures have included instruction, modeling, group discussion, role-playing, behavior rehearsal, coaching, feedback, homework, and reinforcement.

Several studies have documented problems related to the acquisition of social behaviors of hearing-impaired persons (e.g., Bachara, Raphael, & Phelan, 1980; Klansek-Kyllo & Rose, 1985; Meadow, 1976; Meadow & Schlesinger, 1971; Meadow & Trybus, 1979; Odom, Blanton, & Lankhuf, 1973). In spite of this consensus, few studies have evaluated procedures for remediation. The scarce research in this area (e.g., Barton & Osborn, 1978; Kreimeyer & Antia, 1988; Lemanek & Gresham, 1984; Lemanek, Williamson, Gresham, & Jensen, 1986; Rasing & Duker, 1992a; Schloss, Smith, & Schloss, 1984) have reported successful effects in this respect.

In our previous study (Rasing & Duker, 1992a), we have taken into account three considerations. Firstly, we used social validation procedures to select target behaviors and their appropriate and inappropriate instances. We also consulted with teachers and residential staff members about the practicability of the training procedures prior to administering these procedures. Secondly, in order to determine the clinical significance of treatment effects we asked social agents of the participants, that is, teachers and residential staff members, to select socially relevant situations in which the participants were supposed to show the target

[2]This study was presented at the annual conference of the Experimental Analysis of Behavior Group, London, March - April 1992. This study has also been submitted for publication (Rasing & Duker, 1992b)

behaviors. Thirdly, we incorporated the following generalization strategies in the training procedures: (a) The target behaviors and their appropriate and inappropriate instances were selected by teachers and residential staff members presuming that these behaviors would have contact with natural consequences; (b) Training was conducted by teachers and residential staff members in various natural environments and during various activities; (c) Teachers and residential staff members were instructed to socially reinforce appropriate instances of the target behaviors; (d) Tokens that were given were provided on a thinning schedule of reinforcement, (e) Teachers and residential staff members were instructed to correct inappropriate instances of the target behaviors, (f) Teachers and residential staff members were prompted to use similar training procedures, and (g) Cues to evoke the target behaviors were present in all relevant settings. In our study we assessed the effectiveness of a training package on the aquisition and generalization of three social behaviors (i.e , turn waiting, initiating interaction, and interacting with others) with nine 8- and 9-year old language-disabled deaf children The package included: child training, teachers and residential staff members directed supervision, feedback, and goal-setting, and the aforementioned generalization strategies. The training package was effective in increasing the percentage appropriate target behaviors of all nine children in various natural settings, during various activities, and across various persons Maintenance of training effects was demonstrated as well.

The purpose of the present study was to extend and to replicate the study by Rasing and Duker (1992a) with 12- and 13-year old language-disabled deaf children. In contrast with our previous study, the following differences were in effect. First, the subjects in the present study were 12- and 13-year old instead of 8- and 9-years old as in our previous study. Second, the procedure was altered in the following respects: (a) the children discussed the events on videotape using five questions, (b) the teachers pointed to a card with the five questions on it as a consequence for emitting inappropriate instances of the target behaviors, and (c) the first author observed teachers and residential staff members for 30 min and recorded their correct and incorrect responses to appropriate and inappropriate instances of the target behaviors during the first week of training. Third, to control for the possibility that the effects of our previous study might be accounted for by the sequence of the target behaviors, training of the three social behaviors was now

arranged in a different order Finally, interacting with others was recorded during dinner as well

3.2.1 Method

3 2 1 1 Subjects and settings

Nine language disabled deaf children were selected on the basis of their behavioral problems as indicated by their teachers and residential staff members The girl and the eight boys attended the school of a residential facility for the deaf They were enrolled in three different classes of three children each Two boys of class 1, one boy of class 2, and one boy of class 3 resided in one living group at the institution. In the living group there was one boy who did not participate in the study The remaining five children lived with their parents The children, whose ages ranged from 12 years and 1 month to 13 years and 5 months (M = 13 years), had been diagnosed as dysphatic with severe to profound hearing losses Children's vocabulary age (PPVT) ranged from 2 years and 2 months to over 8 years and 1 month Their oral communication was supplemented by an oral-graphic method

The three teachers (i e , one woman and two men) were 38, 32, and 26 years old and had been qualified teachers for 16, 9, and 5 years, respectively The two female residential staff members were 28 years old and were certified for 2 and 4 years The female psychologist was 34 years old and was certified for 4 years Teachers, residential staff members, and the psychologist had completed an in-service training

3 2 1 2 Response definitions

Ten behaviors were identified as problem behaviors by consulting with teachers and residential staff members Teachers and residential staff members then selected three target behaviors, namely (a) initiating interaction, (b) interacting with others, and (c) turn waiting Lastly, teachers and residential staff members defined appropriate and inappropriate instances of the three target behaviors

The following instances of target behaviors were recorded

Initiating interaction appropriate instances The child shows one of the following behaviors (a) raising a hand, (b) calling once or twice a hearing person's name (e g , the teacher or residential staff member), and (c) touching once or twice a

hearing or a deaf person's arm (e g., the teacher or another child). *Initiating interaction inappropriate instances*. The child shows one of the following behaviors: (a) screaming, (b) tapping on the desk, (c) hand flapping, (d) unauthorized out-of-seat, (e) pulling a person's clothes, (f) calling a person's name or touching a person more than twice, and (g) touching a person but not on the arm. *Interacting with others appropriate instances*. The child shows one of the following behaviors: (a) helping someone, (b) comforting someone; (c) telling someone (s)he is kind, funny, or pleasant; and (d) telling someone (s)he has done something well. *Interacting with others inappropriate instances*. The child shows one of the following behaviors: (a) laughing at someone, (b) teasing someone, (c) sticking out the tongue, and (d) making an inappropriate gesture (e.g., pointing at one's forehead) *Turn waiting appropriate instances*. (a) While the child's body is directed toward the person involved (i e , the teacher, a residential staff member, another child), the child asks a person's attention once, but does not interrupt others and waits, (b) the child does not speak before another person is finished; (c) when a person gives turns, the child waits for a turn without speaking and interrupting others *Turn waiting inappropriate instances*. (a) The child starts speaking when another person is speaking, (b) the child interrupts when another person is on-task, and (c) when a person gives turns, the child does not wait for a turn without speaking and interrupting others

3 2 1 3 Data collection and interobserver agreement

Target behaviors were recorded using an 8-sec partial interval recording procedure. Teachers and residential staff members were asked to identify socially relevant interactional situations for recording the target behaviors. Accordingly, initiating interaction and interacting with others were recorded when manual training was practiced and in the children's dayroom for the four boys during dinner. Turn waiting was recorded in the classroom during grammar lessons. The number of recording sessions differed across the experimental phases and across the three classes and the group for the three target behaviors. Each recording session lasted 20 min and was videotaped To reduce reactivity, the camera (i.e., a Sony®CCD-V90E) was present in each of the three settings for two weeks prior to baseline recordings

Data were collected by three primary observers using the HyperCard program for the Macintosh™computer. Prior to formal data collection, the primary observers and the secondary observer (i.e., the first author) had conducted several sessions to get acquainted with the response definitions and the recording procedure. Data collection did not begin until 90% interobserver agreement had been attained for the target behaviors during three consecutive sessions. As an attempt to control for observer drift and bias (Kazdin, 1977a) the following measures were taken: (a) primary observers were kept naive with respect to the experimental hypothesis; (b) primary observers were uninformed as to which experimental phase was in effect at a given point of time; (c) preceding each recording session, observers read the response definitions; (d) primary observers never received feedback on the reliability of their scoring; and (e) the third primary observer started recording after 12 sessions.

Interobserver agreement was assessed on an interval-by-interval basis. Reliability checks were conducted in 39% of the recording sessions and were aproximately equally distributed across the three target behaviors and across the experimental phases. A kappa statistic (Cohen, 1960) was computed to control for chance agreement. For initiating interaction and for interacting with others the average kappa coefficients were .84 (range: .68 - 1.00) and .66 (range: .21- .80), respectively. For turn waiting, an average kappa coefficient of .80 (range: .62 - 1.00) was found.

3.2.1.4 Experimental design

A multiple baseline design across the three target behaviors was employed to assess the functional relationship between training and changes in the frequencies of the three target behaviors. Preceding data collection, teachers, residential staff members, and parents had been informed about which target behaviors were selected for training, in order to assess the differential effectiveness of training these behaviors.

3.2.1.5 Procedure

Baseline. This phase was in effect during four weeks for initiating interaction, nine weeks for interacting with others, and fourteen weeks for turn waiting. Preceding training of the first target behavior, the first author informed teachers and residential staff members about the training procedures to be used. One week preceding

training of each target behavior, the first author handed teachers and residential staff members (a) the lessonson the target behavior in training, (b) the list of appropriate and inappropriate instances of the target behavior, and (c) the materials to be used when the children showed appropriate or inappropriate instances of the target behavior

Training This phase was in effect during five weeks for each target behavior The list of appropriate and inappropriate instances of the target behavior was posted in front of the classroom and on the living group The procedure consisted of *child training and teachers and residential staff members directed supervision, feedback, and goal-setting*

Child training consisted of (a) nine, 30-min lessons given by the teacher, (b) contingent reinforcement for each appropriate instance of the target behavior; and (c) a correction procedure to be used for each occurrence of an inappropriate instance of the target behavior The teacher and residential staff member provided the children with contingent reinforcement, and administered the correction procedure during school hours and when the children were on the living group

First, during the first three lessons, given in the first week, the teacher prompted the children to emit (a) appropriate and inappropriate instances of the target behavior in training, and (b) examples of situations in which the target behavior might occur Furthermore, the teacher provided the children with verbal and modeled instruction about the consequences of showing the appropriate and inappropriate instances of the target behavior That is, the teacher practiced the reinforcement procedure and the correction procedure with the children during two or three role-plays Following these lessons, six problem solving lessons were given within a period of four weeks During each two successive problem solving lessons, the children watched a videotape showing a model (i e , a hearing child of their chronological age, demonstrating one particular appropriate instance of the target behavior) The videotape was displayed until the target behavior occurred The teacher then prompted the children to discuss the event on the videotape using the following five questions (a) "What is the problem ?", (b) "How can I handle it?", (c) "What are the consequences of the responses to the previous question?", (d) "How should I respond to it?", and (e) "Did I choose a correct response?" Drawings on the

children's worksheets visualized these five questions. The teacher instructed one or two children to role-play their responses to the fourth question, and following this, the teacher asked the remaining children whether it was either an appropriate response or not. Finally, the children watched the appropriate example of the model on videotape and selected the most appropriate response.

Second, when a child showed appropriate instances of the target behavior during school hours or on the living group, the teacher or residential staff member provided him or her with verbal praise and a token (viz., points on a tally sheet). Tokens were provided on the basis of child performance rather than on group performance. During school hours, 10 tokens could be exchanged for one item of a series of cards (e.g., animal-cards). When the children were on the living group, a group contingency was in effect; 30 tokens could be exchanged for special group activities (e.g., swimming). From the very start, teachers and residential staff members were prompted to deliver tokens on a variable schedule in such a way that deliverance would not interfere with regular activities. To accomplish maintenance of training effects (Kazdin, 1977b, 1982; Stokes & Osnes, 1989), the schedule of reinforcement was gradually thinned from CRF to VR-5. For this purpose, teachers and residential staff members were handed a diagram of the percentages appropriate target behavior that needed to be reinforced with tokens each day.

The third component of child training consisted of correcting the children for inappropriate instances of the target behavior. When a child showed an inappropriate instance of the target behavior during school hours or on the living group, the teacher or residential staff member gave the child a card with drawings representing the five above-mentioned questions. The teacher or staff member instructed the child to look at these. For the convenience of teachers or staff members, correction could also consist of pointing to a poster with the drawings of the questions and instructing the child to look at these.

Supervision, feedback, and goal-setting consisted of two components. First, the psychologist observed each of the teachers while teaching the lessons and provided them with feedback. For this purpose, the psychologist attended one lesson each week and provided the teacher with verbal performance feedback during a weekly 15-min meeting. Second, the psychologist provided feedback to the teachers and

residential staff members regarding their administration of reinforcement and correction The psychologist was present in the classrooms and on the living group for 30 min each week and recorded teachers' and staff members' correct and incorrect responses to appropriate and inappropriate instances of the target behavior During weekly 15-min meetings, the psychologist provided each teacher and staff member feedback using a graph of percentage correct responses to the target behavior The psychologist prompted teachers and staff members to attain a goal that was initially set at 80% correct responses to children's appropriate and inappropriate instances of the target behavior When they met or exceeded the goal, the psychologist praised them and increased the goal for next week When teachers or staff members failed to meet the goal, the psychologist prompted them to attain the previous goal next week

Follow-up During this phase, formal training was discontinued However, the first author prompted the teachers and staff members to continue their praising appropriate instances of the target behaviors and to apply the correction procedure if necessary Furthermore, the lists of appropriate and inappropriate instances of the target behavior, the cards with drawings representing the five questions, and the posters were remained in place

Follow-up was in effect during eleven weeks for initiating interaction and six weeks for interacting with others Due to the end of the school year, there was only a one week follow up for turn waiting

3.2.2 Results

For each class and for the group, the mean number of occurrences of appropriate and inappropriate instances of the target behaviors per 20 min across the experimental conditions and the percentages appropriate target behaviors during the experimental conditions are presented in Figures 3 3 to 3 6 The percentages appropriate target behaviors were calculated because the children showed much variation in their frequency of occurrence within each experimental condition

Figures 3 3 to 3 6 illustrate the results of introducing the procedure sequentially across the three target behaviors Specifically, it is shown (left panel) that the mean

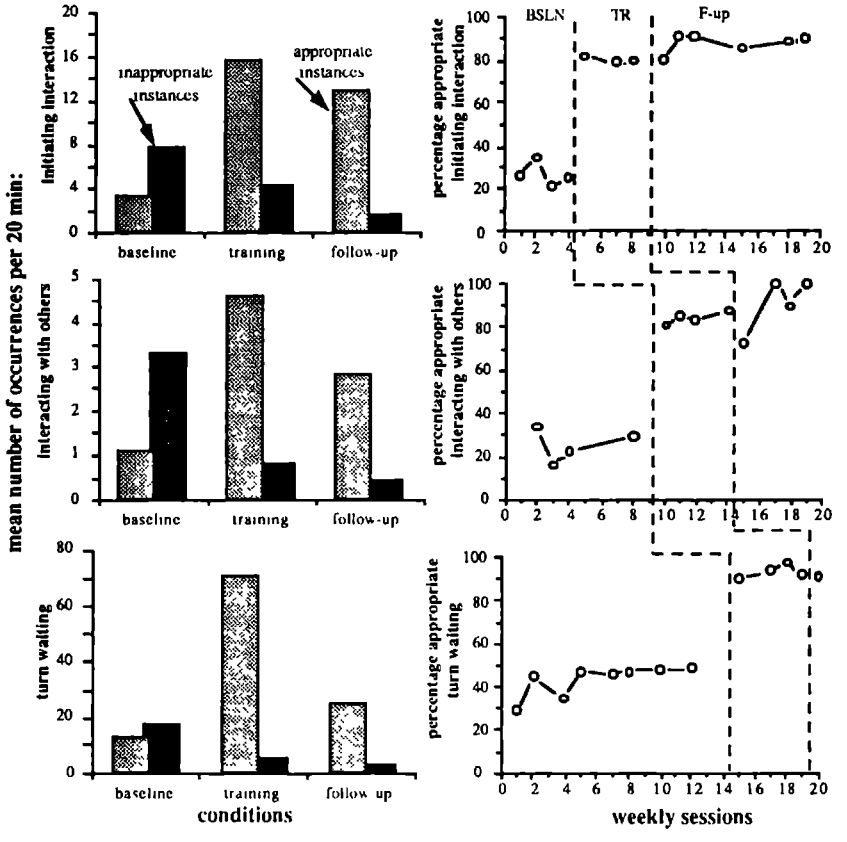

Figure3.3 The left part of the figure shows the mean number of occurrences of appropriate and inappropriate instances of the target behaviors per 20 min across baseline, training, and follow-up. The right part shows the multiple-baseline analysis of percentage appropriate target behaviors for class 1.

number of occurrences appropriate target behaviors increased and that the mean number of intervals inappropriate target behaviors decreased when training was in effect. During follow-up, the mean number of occurrences appropriate target behaviors remained above baseline level while the mean number of occurrences inappropriate target behaviors remained below baseline level. Correspondingly, the mean percentage appropriate target behaviors (right panel) increased in function of the training and was maintained during follow-up.

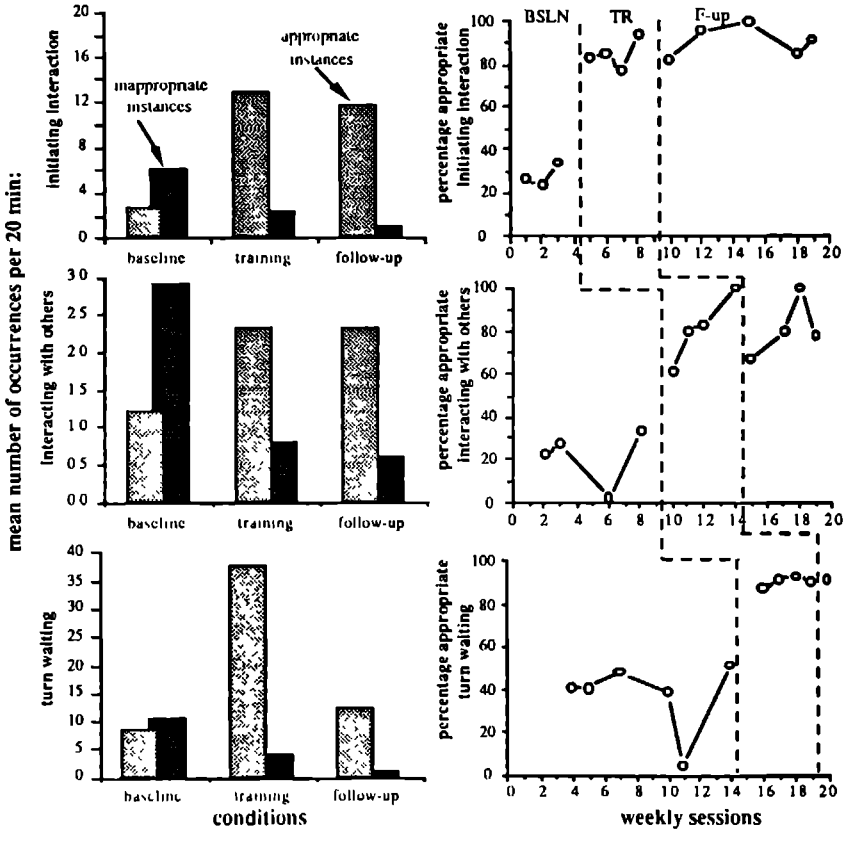

Figure 3.4 The left part of the figure shows the mean number of occurrences of appropriate and inappropriate instances of the target behaviors per 20 min across baseline, training, and follow-up. The right part shows the multiple-baseline analysis of percentage appropriate target behaviors for class 2.

Statistical analysis using the Wilcoxon Matched-Pairs Signed-Rank Test showed that the mean percentage appropriate target behaviors across the nine children increased statistically significant apparently in function of the training, $z = 2.666$, $p < .005$ (two-tailed) for all three target behaviors. The children showed no significant changes in their performance of the three target behaviors during follow-up as compared to the training condition.

The data of the individual children are presented in Table 3.2, showing that all nine children improved their mean percentage initiating interaction when the training was

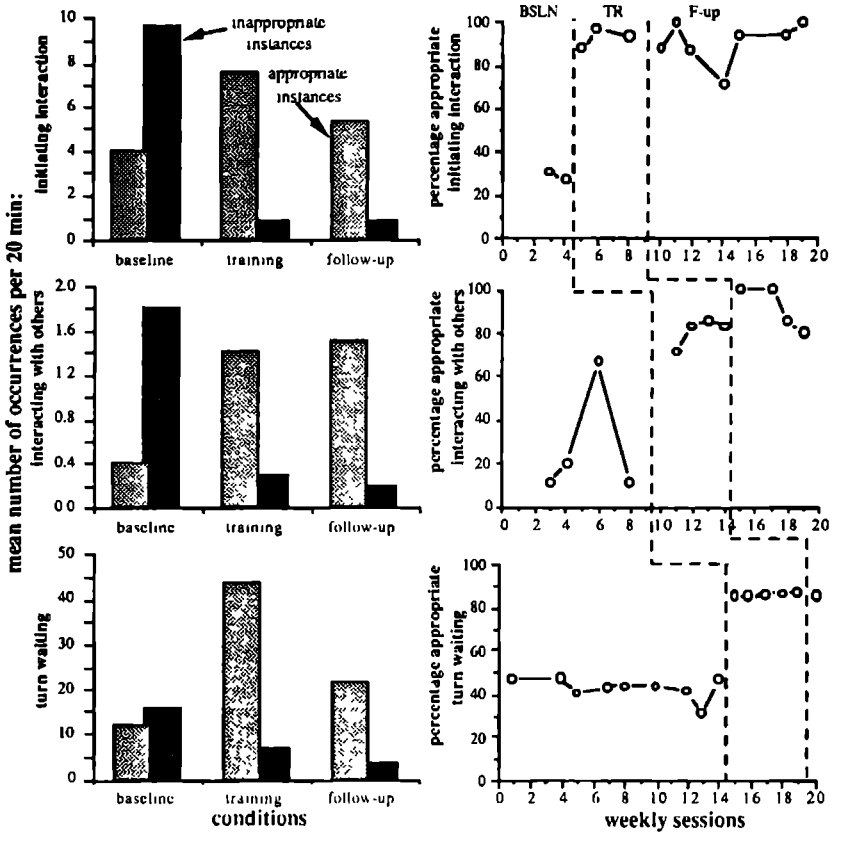

Figure 3.5 The left part of the figure shows the mean number of occurrences of appropriate and inappropriate instances of the target behaviors per 20 min across baseline, training, and follow-up. The right part shows the multiple-baseline analysis of percentage appropriate target behaviors for class 3.

in effect. During baseline, the grand mean percentage of appropriate initiating interaction for manual training across the children was 27.7 (range: 19.6 - 36.3). During training, their grand mean performance increased to 86.1% (range: 73.0% - 100%). There was a further increase during follow-up, except for child 7 and child 8 whose performance slightly decreased, although their performance still exceeded baseline mean. The grand mean percentage appropriate initiating interaction during follow-up was 89.9 (range: 80.4 - 95.2). For all four children on the living group the grand mean percentage appropriate initiating interaction also increased as a result

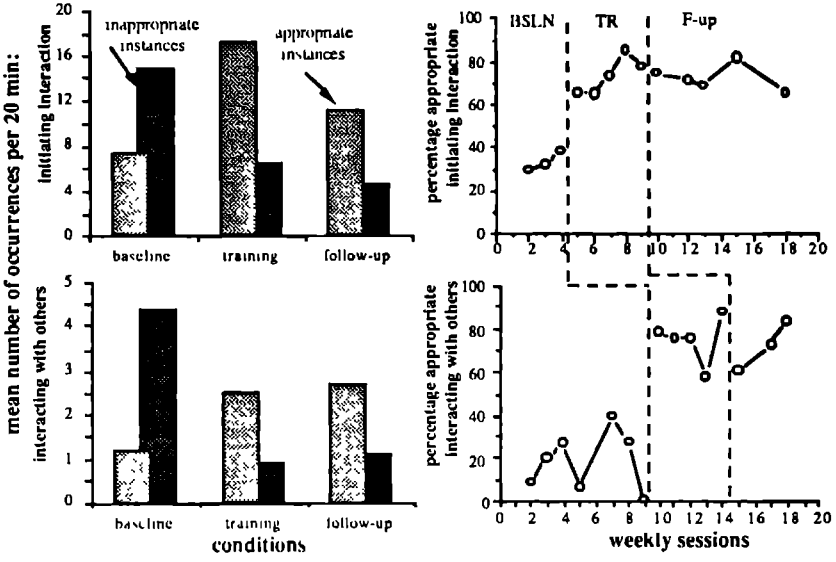

Figure 3.6 The left part of the figure shows the mean number of occurrences of appropriate and inappropriate instances of the target behaviors per 20 min across baseline, training, and follow-up. The right part shows the multiple-baseline analysis of percentage appropriate target behaviors for the living group.

of the training. Across the children this value increased from 33.3% (range: 29.7% - 36.0%) during baseline to 74 3% (range: 71.1% - 76.4%) during training. The grand mean percentage was 73.2 (range: 70.0 - 81.2) during follow-up. Inspection of Table 3.2 also shows that all nine children improved their mean percentage interacting with others and their mean percentage turn waiting when training was in effect. During baseline, the grand mean percentages appropriate interacting with others across the children were 15.3 (range: 0 - 30.6) for manual training and 18.8 (range: 4.2 - 29.6) on the living group. During training, the grand mean percentages increased to 86.9 (range: 67.1 - 100) for manual training and to 77.3 (range: 67.3 - 85.0) on the living group. During follow-up, the mean percentage appropriate interacting with others remained at training level in both situations. The grand mean percentages appropriate interacting with others across the children during follow-up were 89.9 (range: 75.6 - 100) and 77.8 (range: 63.9 - 88.9) for manual training and on the living group, respectively. Across the children the grand mean percentage appropriate turn waiting for grammar lessons increased from 43.7 (range: 34.4 - 50.2) during baseline to 90.3 (range: 79.3 - 96.7) during training.

Table 3 2

Mean Percentage Appropriate Target Behaviors during the Conditions of Baseline, Training, and Follow-up for the Nine Children

	Initiation Interaction			Interacting with others			Turn Waiting		
Child	BSLN	TX	F-up	BSLN	TX	F up	BSLN	TX	F-up
				Class 1					
1	36 3	82 4	90 8	30 6	88 1	91 2	45 0	90 4	97 9
2	22 2	73 0	80 4	0 0	94 2	88 9	39.5	93 2	100
3	19 6	88 2	93 1	0 0	83 7	77 8	45 2	96 7	68.4
				Class 2					
4	26 8	88 2	89 6	8 3	86 7	100	44 2	85 8	90.9
5	26 9	85 6	90 3	19 9	76 0	88 9	48 0	93 5	93 3
6	31 6	79 6	91 8	29 2	86 7	75 6	40 2	94 4	—
				Class 3					
7	25 0	100	95 2	11 1	100	100	46 2	84 1	77 8
8	28 1	91 4	84 0	21 7	67 1	87 5	34 4	79 3	77 8
9	32 6	86 7	93 6	16 7	100	100	50 2	95 7	96 8
				Group					
1	34 5	76 4	81 2	29 6	78 3	63 9			
2	29 7	74 6	71 3	19 7	85 0	88 2			
5	36 0	74 9	70 4	4 2	67 3	70 0			
7	33 1	71 1	70 0	21 8	78 7	88 9			

Note BSLN = Baseline, TX = Training, F-up = Follow-up

There was only one follow-up session for turn waiting, except for child 6. The grand mean percentage appropriate turn waiting was 87.9 (range: 68.4 - 100) during follow-up.

3.2.3 Discussion

The present study corroborates the findings of our previous study (Rasing & Duker, 1992a) concerning the effectiveness of a multifaceted training package on the acquisition and generalization of three social behaviors In this study, a slightly different procedure was also successful in increasing appropriate target behaviors of 12- and-13-year old language-disabled deaf children. During manual training and on the living group, the children increased their percentage appropriate initiating interaction and percentage appropriate interacting with others when training was administered. During follow-up, seven children further increased their percentage appropriate initiating interaction and four children further increased their percentage

appropriate interacting with others when manual training was practiced. On the living group, children's performance remained at a high level. Percentage appropriate turn waiting also increased as a function of the training for all nine children during grammar lessons. To determine the effectiveness of the procedure, we used percentage appropriate target behaviors because the children showed much variation in the frequency of performing the target behaviors within each experimental condition. We believe that the parameter that defines whether a child is socially adaptive is the appropriateness of the performance when a child has to show the target behavior. We also believe that the treatment effects are clinically significant because (a) these effects were recorded in socially relevant situations that had been selected by teachers and residential staff members and (b) there was a very large increase in percentage appropriate target behavior when training was in effect.

Nevertheless, several limitations should be imposed on the conclusions of the present study. First, generality of conclusions may be limited to language-disabled deaf children. Second, although measures were taken to control for observer drift and bias, phase change could have signalled the experimental hypothesis because an abrupt change in level of percentage appropriate target behavior occurred when training was in effect. For this reason, we brought in a newly trained observer after 12 sessions. Kazdin (1977a) suggested that drift might be controlled by having observers score the tapes in a random order at the end of the study. However, we had an agreement with children's parents not to store the tapes. Finally, therapist drift (Peterson, Homer, & Wonderlich, 1982) could have been a threat to the integrity of the independent variable. Given that, regardless of some slight procedural modifications, treatment effects are obtained that are similar across the three classes, the three target behaviors, and two different studies, this suggests a robust functional relationship between the independent and dependent variable.

The present study appears to hold relevance for the following reasons. First, the present study extends the findings of our previous study to 12- and 13-year old language-disabled deaf children. Second, the present study confirms the internal validity of both studies, in that as an attempt to control for a multiple treatment effect, training of the three target behaviors was arranged in an order that differed with our previous study. Finally, the present study shows that a training package that contains: (a) behavioral, (b) cognitive-behavioral, and (c) organizational

behavioral management techniques in conjunction with procedures to obtain social validity is a viable procedure to remediate social behaviors of language-disabled deaf children.

Future research should examine the effectiveness of the training procedure with other social behaviors, for examples, greeting and helping. Also, replications of this study with other groups, especially, deaf children and deaf adolescents are still needed. Lastly, additional research addressing the differential effectiveness of each component of the procedure should be conducted as well.

3.3 Social behaviors in deaf children: Acquisition, generalization, and component analysis of a training package[3]

A number of studies have documented several problems with hearing-impaired persons. When compared with their normal hearing peers, hearing impaired persons show a higher incidence of behavior problems (Freeman, Malkin, & Hastings, 1975; Meadow & Schlesinger, 1971; Vernon, 1969), have a lower self-esteem (Craig, 1965; Farrugia & Austin, 1980; Grimes & Prickett, 1988; Schlesinger & Meadow, 1972), and are in arrears with the acquisition of social cognition (Bachara, Raphael, & Phelan, 1980; Cates & Shontz, 1990, Kusché & Greenberg, 1983, Odom, Blanton, & Laukhuf, 1973).

Numerous studies have documented procedures to remediate social deficits with a variety of populations (e.g., Amish, Gesten, Smith, Clark, & Stark, 1988; Ammerman, Van Hasselt, Hersen, & Moore, 1989; Bates, 1980; Berler, Gross, & Drabman, 1982; Eisler, Hersen, & Miller, 1974; Gresham & Evans, 1987; Mesibov, 1984). Although various procedures to remediate social deficits in hearing-impaired persons have been recommended, few studies have been undertaken to evaluate these procedures. The scarce research in this area has dealt with cognitive-behavioral and behavioral procedures (e.g., Antia & Kreimeyer, 1988; Barton & Osborn, 1978; Kreimeyer & Antia, 1988; Lemanek & Gresham,

[3]This study was presented at the ABA 18th annual convention, San Francisco, May 1992. This study has also been accepted for publication Rasing E. J. (in press) Effects of a multifaceted training procedure on the acquisition and generalization of social behaviors in hearing-impaired children with severe language disabilities A replication. *Journal of Applied Behavior Analysis*.

1984; Lemanek, Williamson, Gresham, & Jensen, 1986; Rasing & Duker, 1992a, 1992b; Schloss, Smith, & Schloss, 1984) and have documented successful effects in this respect.

In our previous studies we assessed the effectiveness of a training package on the acquisition and generalization of social behaviors with language-disabled deaf children (Rasing & Duker, 1992a, 1992b). The package included child training, using behavior modification and cognitive mediation techniques, and mediator training, using organizational behavioral management techniques. In both studies, we used procedures to promote generality of effects and social validity of the procedures. Results demonstrated that the training package was effective in increasing the percentage appropriate target behaviors in various natural settings, during various activities, and across various persons. Maintenance of training effects was demonstrated as well.

Although the effectiveness of the training package was demonstrated, it is important to assess the relative contribution of each component of the package, in order to reduce time and costs, thereby increasing versatility. In addition, a procedure should be effective and socially acceptable.

The present study assessed (a) the effectiveness of a training package on the acquisition and generalization of four social behaviors with twenty 7- to 13-year old deaf children with severe language disabilities and (b) the relative contribution of the cognitive mediation component of the package. Procedures to promote generality of effects and social validity, similar to those of our previous studies (Rasing & Duker, 1992a, 1992b), were used as well.

3.3.1 Method

3.3.1.1 Subjects and settings

Four female and sixteen male deaf children with severe language disabilities participated. Participants were selected on the basis of their behavioral problems as indicated by their teachers and residential staff members. They had severe to profound hearing losses (over 70 dB in the better ear across the frequencies of speech). They attended a school at a residential facility for the deaf and were enrolled in six different classes of three or four children each. Fourteen boys and

three girls resided in six living groups. Three children lived with their parents. Due to logistical constraints, data were collected in only three living groups, which contained a total of ten boys and one girl.

The six classes were randomly assigned to two clusters of three classes each. Cluster 1 contained eight boys and one girl of which four boys resided in two living groups. Children's chronological ages ranged from 8 years and 4 months to 13 years and 9 months (M = 11; 3 years). Each child had an average or above-average level of intelligence as measured by standard tests. Children's vocabulary-ages (PPVT) ranged from 3 years and 1 month to 7 years and 1 month (M = 5; 2 years). Cluster 2 contained eight boys and three girls of which six boys and one girl resided in two living groups. Children's ages ranged from 7 years and 11 months to 11 years and 5 months (M = 9; 8 years). Eight children had an average level of intelligence and three children were of below-average level of intelligence. Their vocabulary-ages (PPVT) ranged from 2 years and 9 months to 5 years and 7 months (M = 3; 6 years).
As all children had difficulties in processing oral instructions, communication with them was augmented by fingerspelling and written language.

The six teachers (i.e., three women and three men) ranged in age from 31 to 44 years and had been qualified teachers ranging from 6 to 17 years. The seven female and two male residential staff members ranged in age from 24 to 43 years and they were certified ranging from 3 to 18 years. The two female psychologists were 26 and 35 years old and were certified for 1 and 5 years, respectively. Teachers and residential staff members had completed an in-service training.

3.3.1.2 Response definitions
In consultation with teachers and residential staff members, the following four target behaviors were selected: (a) greeting, (b) turn waiting, (c) initiating interaction, and (d) giving help. Teachers and residential staff members defined the following appropriate and inappropriate instances of the target behaviors.

Appropriate instances of target behaviors. Greeting: When meeting or leaving a person (e.g., teacher, residential staff member, another child) within a 5 m distance, the child either (a) looks at that person and says hello once or twice, (b)

looks at that person and says goodbye once or twice, or (c) looks at that person and shakes hands. When meeting or leaving a person beyond a 5 m distance, the child raises or waves hand. *Turn waiting*: (a) While the child's body is directed toward the person involved (i.e., teacher, residential staff member, another child), the child draws that person's attention once, but does not interrupt and waits; (b) the child does not speak before another person is finished; (c) when a person gives turns, the child waits quietly for a turn. *Initiating interaction*: The child (a) raises a hand, (b) calls a hearing person's name once or twice (e.g., teacher or staff member), and (c) touches a hearing or a deaf person on the arm once or twice. *Giving help*: The child shows one of the following behaviors in order to help someone, unless another person asks not to do so: (a) carrying, (b) getting, (c) opening or closing, (d) holding, (e) passing, or (f) demonstrating something (e.g., a utensil).

Inappropriate instances of target behaviors. Greeting: When meeting or leaving a person (e.g., teacher, residential staff member, another child), the child: (a) says hello or goodbye once or twice but does not establish eye contact, (b) shakes hands with someone but does not establish eye contact, (c) repeats saying hello or goodbye over two times, (d) merely looks at someone, (e) shouts hello or goodbye, and (f) fails to greet. *Turn waiting*: The child (a) starts speaking when another person is speaking, (b) interrupts when another person is on-task, and (c) fails to wait quietly for a turn when a person gives turns. *Initiating interaction*: The child: (a) screams, (b) taps on the desk, (c) flaps hands, (d) is unauthorized out-of-seat, (e) pulls someone's clothes, (f) calls someone's name or touches someone more than twice, and (g) touches someone at other places but the arm. *Giving help*: The child (a) refrains from showing one of the appropriate instances of giving help if another person asks to do so, (b) shows one of the appropriate instances of giving help if another person asks not to do so, and (c) laughs at someone.

3.3.1.3 Recording

Greeting, initiating interaction, and giving help were recorded using event recording. Turn waiting was recorded using an 8-sec partial interval recording procedure. Teachers and residential staff members were asked to identify relevant situations for recording the target behaviors. Accordingly, greeting was recorded when the children entered and left the manual training room and their dayroom at lunch-time. Turn waiting was recorded in the classroom during grammar lessons.

Initiating interaction and giving help were recorded when manual training was practiced and in the children's dayroom during dinner

Data for greeting were collected in situ by two primary observers (i.e., one of the psychologists and the author) and four secondary observers (i.e., teacher and three staff members). Recording sessions started when the first child entered or left the manual training room and the dayroom at lunch-time and lasted until the last child did so The remaining three target behaviors were videotaped and recorded by three primary observers and one secondary observer (i e , the author) using the HyperCard program for the Macintosh™ computer. Recording sessions lasted 20 min. The number of recording sessions differed across the experimental phases and across classes and living groups for all four target behaviors.

3.3.1.4 Reliability for recording

Data collection did not begin until 90% interobserver agreement had been attained for the target behaviors during two consecutive sessions. As an attempt to control for observer drift and bias (Kazdin, 1977a) the following measures were taken (a) preceding each recording session, observers read the response definitions; (b) primary observers never received feedback on the reliability of their scoring; (c) primary observers were kept naive with respect to the experimental hypothesis; and (d) primary observers were not informed as to which experimental phase was in effect at a given point of time As for the recording of greeting, only the first measure could be taken

Reliability checks were conducted in 26 1% of the recording sessions for greeting, 40% for turn waiting, 35 5% for initiating interaction, and 33 3% for giving help and were approximately equally distributed across the three experimental phases. Percentage of agreement between observers was calculated by dividing the number of agreements by the total number of agreements plus disagreements and multiplied by 100. Mean percentage agreement between observers was 84.7 (range· 63.8 - 100) for greeting, 81 4 (range 53 6 - 100) for turn waiting, 82.5 (range. 46.7 - 100) for initiating interaction, and 79 6 (range. 0 - 100) for giving help

3.3.1.5 Experimental design

A combination of a multiple baseline design and an inverted design (Kratochwill, 1978) was employed to assess (a) the effect of both training packages, that is, Full Training package (FT) and Partial Training package (PT) and (b) the differential effectiveness of FT and PT. Figure 3.7 shows a schematic representation of the order of introduction of the two packages across the target behaviors and the two clusters.

As an attempt to control for reactive intervention, baseline lengths were determined prior to data collection. Preceding data collection, teachers, residential staff members, and parents had been informed about the target behaviors.

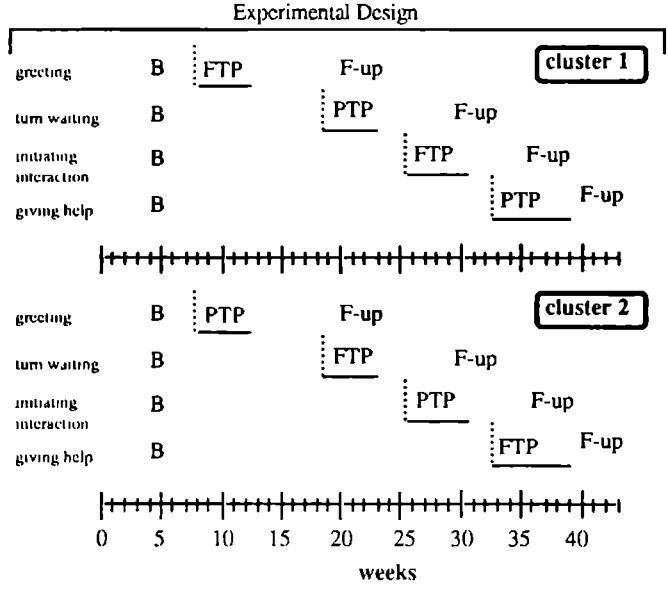

Figure 3.7 A schematic representation of the order of introduction of the two training packages across the target behaviors and the two clusters.

3.3.1.6 Procedure

Baseline. This phase was in effect during seven weeks for greeting, eighteen weeks for turn waiting, twenty-five weeks for initiating interaction, and thirty-two weeks for giving help. Preceding training of the first target behavior, the author informed the teachers and the staff members about the training procedures to be used. One

week preceding training of each target behavior, the author handed teachers and residential staff members (a) the lessons that referred to the target behavior, (b) the list of appropriate and inappropriate instances of the target behavior, and (c) the materials to be used when the children showed appropriate or inappropriate instances of the target behavior.

Full Training Package (FT). This phase was in effect during five weeks. The list of appropriate and inappropriate instances of the target behavior was posted in front of the classroom and on the living groups. The procedure consisted of *child training* and *teachers and residential staff members directed supervision and feedback*

Child training consisted of: (a) nine, 30-min teacher given lessons,
(b) reinforcement of each appropriate instance of the target behavior, and (c) a correction procedure to be used for each occurrence of an inappropriate instance of the target behavior Immediately following each occurrence of the target behavior, the teacher and staff member provided the children with reinforcement (appropriate instances) or administered the correction procedure (inappropriate instances).

First, during the first three lessons, given in the first week, the teacher prompted the children to emit (a) appropriate and inappropriate instances of the target behavior in training, and (b) examples of situations in which the target behavior might occur Furthermore, the teacher provided the children with verbal and modeled instruction about the consequences of showing the appropriate and inappropriate instances of the target behavior. That is, the teacher practiced the reinforcement procedure and the correction procedure with the children during two or three role-plays Following these lessons, six problem-solving lessons were given within a period of four weeks During each two successive problem-solving lessons, the children watched a videotape showing a model, that is, a hearing child of their chronological age, demonstrating one particular appropriate instance of the target behavior The videotape was displayed until the target behavior occurred Then, the teacher prompted the children to discuss the event on the videotape using the following five questions (a) "What is the problem?", (b) "How can I handle it?", (c) "What are the consequences for the responses to the previous question?", (d) "How should I respond to it?", and (e) "Did I choose a correct response?". Drawings on the children's worksheets visualized these questions However, for

two classes (i.e., two classes of Cluster 2) the third question could not be discussed due to the children's low functioning. The teacher instructed one or two children to role-play their responses to the fourth question, and following this, the teacher asked the remaining children whether it was an appropriate response or an inappropriate response. Finally, the children watched the appropriate example of the model on videotape and selected the most appropriate response.

Second, when a child showed appropriate instances of the target behavior during school hours or on the living group, the teacher or staff member provided verbal praise and a token (viz., marks on a tally sheet). Tokens were provided on the basis of individual performance rather than on group performance. During school hours, 10 tokens could be exchanged for one item of a series of cards (e.g., animal-cards). When the children were on the living group, however, a group contingency was in effect; 30 tokens could be exchanged for special group activities (e.g., swimming). From the very start, teachers and staff members were prompted to deliver the tokens in such a way that it would not interfere with regular activities. To accomplish maintenance of training effects (Kazdin, 1977b, 1982; Stokes & Osnes, 1989), the schedule of reinforcement was thinned from CRF to VR-5. For this purpose, teachers and staff members were handed a diagram of the percentages of appropriate target behavior that needed to be reinforced with tokens each day.

The third component of child training consisted of correcting the children for inappropriate instances of the target behavior. When a child showed an inappropriate instance of the target behavior during school hours or on the living group, the teacher or staff member gave the child a card with drawings of the above-mentioned questions. The teacher or staff member instructed the child to look at these. For the convenience of teachers or staff members, correction could also consist of pointing to a poster with the drawings of the questions and instructing the child to look at these.

Supervision and feedback encompassed two components. First, the psychologist observed each teacher while giving the lessons and provided them with feedback. For this purpose, the psychologist attended one lesson each week and provided the teacher with verbal performance feedback during weekly 15-min meetings. Second, the psychologist provided teachers and staff members with feedback regarding their

administration of reinforcement and correction. The psychologist was present in the classrooms and on the living groups for 30 min each week, and recorded teachers' and staff members' correct and incorrect responses to appropriate and inappropriate instances of the target behavior. During weekly 15-min meetings, the psychologist provided each teacher and staff member with feedback by showing them a graph of the percentage correct responding. The psychologist prompted teachers and staff members to increase their percentage of correct responses to children's appropriate and inappropriate instances of the target behavior next week. Contingent upon such an increase, praise would be given.

Partial Training Package (PT). This package was identical with the Full Training Package, except that the six problem solving lessons were not given.

Follow-up. During this phase, formal training was discontinued. However, the author prompted the teachers and staff members to continue their praising of appropriate instances of the target behaviors and to remind the children of appropriate instances of the target behaviors by pointing to the poster when they showed inappropriate instances. Furthermore, lists of appropriate and inappropriate instances of the target behaviors, cards with drawings representing the above-mentioned questions, and posters remained in place.

Follow-up was in effect during thirty-one weeks for greeting, twenty weeks for turn waiting, thirteen weeks for initiating interaction, and four weeks for giving help.

3.3.1.7 Social validation

Teachers and residential staff members were consulted with about the practicability of the training procedures prior to administering these procedures. They identified and selected the target behaviors and the appropriate and inappropriate instances of each of these behaviors. They also selected socially relevant situations for data collection. Each teacher used both training packages. After completion of the study, all teachers (n=6) and staff members of two living groups (n=6) filled out a social validation questionnaire. All teachers and staff members considered the training packages effective in improving the children's performances for greeting and giving help. For turn waiting and initiating interaction, four teachers and the staff members

considered the training packages effective in improving the performance of the children. Although all teachers believed that the problem solving lessons were not an effective component of the training package, two teachers preferred FT to PT, whereas the other four teachers preferred PT. Furthermore, three teachers and the staff members of one living group indicated that they would prefer PT for training of social behaviors. The other three teachers and staff members reported that they would not use either training package.

3.3.2 Results

Percentages of appropriate target behaviors were calculated by dividing the number of occurrences of appropriate instances by the total number of occurrences of appropriate and inappropriate instances and multiplied by 100. Percentages of appropriate target behaviors are deemed to express the appropriateness of the performance. Table 3.3 shows descriptive and statistical findings for both training packages. If there are no statistically significant differences between FT and PT in increasing the percentages of appropriate target behaviors, they can be considered functionally identical.

The grand mean percentages of appropriate greeting for manual training during baseline were 11.5 and 12.5 for FT and PT, respectively. During training, grand mean percentages increased to 82.4 for FT and to 70.1 for PT. The grand mean percentages of appropriate greeting for manual training during follow-up were 64.3 for FT and 64.0 for PT. On the living groups, grand mean percentages of appropriate greeting for FT were 39.6, 95.8, and 77.5 for baseline, training, and follow-up, respectively. The grand mean percentages appropriate greeting for PT were 14.3, 88.2, and 85.1 for baseline, training, and follow-up, respectively. The grand mean percentages appropriate turn waiting increased from 42.8 during baseline to 68.9 during training and increased to 72.9 during follow-up for FT and from 47.0 during baseline to 68.4 during training and to 78.1 during follow-up for PT.

As for appropriate initiating interaction during manual training, grand mean percentages increased from 33.7 during baseline to 80.7 during training for FT and from 31.0 during baseline to 74.6 during training for PT. During follow-up, these percentages slightly decreased to 79.2 and 73.9 for FT and PT, respectively. On the

Table 3.3

Means and Ranges of Percentages Appropriate Target Behaviors during Experimental Conditions for the Two Training Packages and t-Values and Associated p-Values for Differences Between Experimental Conditions

	BSLN	TX	F-up	BSLN vs TX		TX vs F-up	
Behavior[a]	*M* (Range)	*M* (Range)	*M* (Range)	*t*	*p*	*t*	*p*
			Class				
Greeting							
FT (1)	11.5 (0.0-25.0)	82.4 (62.5-100)	64.3 (33.3-100)	17.495	<.01	-1.580	ns
PT (2)	12.5 (0.0-50.0)	70.1 (50.0-100)	64.0 (37.5-87.5)	9.209	<.01	-0.766	ns
Turn waiting							
FT (2)	42.8 (31.7-48.5)	68.9 (53.9-85.1)	72.9 (54.1-85.5)	12.023	<.01	1.764	ns
PT (1)	47.0 (44.6-52.0)	68.4 (51.6-76.3)	78.1 (63.5-87.9)	10.468	<.01	4.727	<.01
Initiating Interaction							
FT (1)	33.7 (18.7-43.1)	80.7 (58.3-100)	79.2 (55.0-100)	14.058	<.01	-2.890	ns
PT (2)	31.0 (13.7-42.1)	74.6 (55.0-100)	73.9 (56.7-100)	9.086	<.01	-0.154	ns
Giving help							
FT (2)	36.6 (16.7-69.4)	100	92.9 (66.7-100)	10.815	<.01	-1.442	ns
PT (1)	40.7 (0.0-58.3)	99.1 (91.7-100)	100	8.494	<.01	1.000	ns
			Living Group				
Greeting							
FT (1)	39.6 (25.0-50.0)	95.8 (83.3-100)	77.5 (50.0-100)	14.080	<.01	-1.540	ns
PT (2)	14.3 (0.0-50.0)	88.2 (67.7-100)	85.1 (50.0-100)	8.415	<.01	-0.430	ns
Initiating Interaction							
FT (1)	39.1 (36.7-41.3)	73.4 (63.1-83.3)	65.7 (48.6-76.4)	7.585	<.01	-3.228	<.05
PT (2)	34.4 (13.3-42.8)	69.5 (52.4-100)	68.8 (55.7-100)	3.799	<.01	-0.248	ns
Giving help							
FT (2)	46.0 (12.5-62.5)	96.2 (83.3-100)	96.3 (88.9-100)	6.440	<.01	0.028	ns
PT (1)	37.4 (23.5-47.6)	94.8 (91.0-100)	94.9 (79.4-100)	13.090	<.01	0.050	ns

Note. BSLN = Baseline; TX = Training; F-up = Follow-up.

[a]FT = Full Training Package; PT = Partial Training Package; 1 = Cluster 1; 2 = Cluster 2.

living groups, the grand mean percentages appropriate initiating interaction were 39.1 during baseline, 73.4 during training, and 65.7 during follow-up for FT. For PT, these percentages were 34.4, 69.5, and 68.6 during baseline, training, and follow-up, respectively.

The grand mean percentages giving help appropriately for manual training were 36.6 for FT and 40.7 for PT during baseline. During training, grand mean percentages increased to 100 for FT and to 99.1 for PT. The grand mean percentages giving help appropriately were 92.9 for FT and 100 for PT during follow-up. On the living groups, the grand mean percentages giving help appropriately were 46.0 during baseline, 96.2 during training, and 96.3 during follow-up for FT. For PT these percentages were 37.4, 94.8, and 94.9 during baseline, training, and follow-up, respectively.

Statistical analysis, using a *t*-test for paired samples, yielded significant differences between baseline and training in the class and on the living groups for both training packages for each target behavior at a $p < .01$ level (1-tailed). During follow-up, the percentage appropriate turn waiting in the class significantly increased at a $p < .01$ level (2-tailed) for the partial training package and the percentage appropriate initiating interaction on the living groups significantly decreased at a $p < .05$ level (2-tailed) for the full training package. There were no other significant differences at the $p < .05$ level between training and follow-up for either training packages.

Statistical analysis, using a *t*-test for unpaired samples, revealed that there were no statistically significant differences between both training packages in (a) improving the percentage appropriate target behaviors and (b) maintaining the gain in percentage appropriate target behaviors during follow-up for all twenty children in the class and for the eleven children on the living groups at a $p < .05$ level (2-tailed). FT and PT could be considered, therefore, functionally identical.

Mean number and ranges of occurrences of appropriate and inappropriate instances of the target behaviors per hour across the experimental conditions and the percentages appropriate target behaviors during the experimental conditions are presented in Figure 3.8 for the class and in Figure 3.9 for the living group.

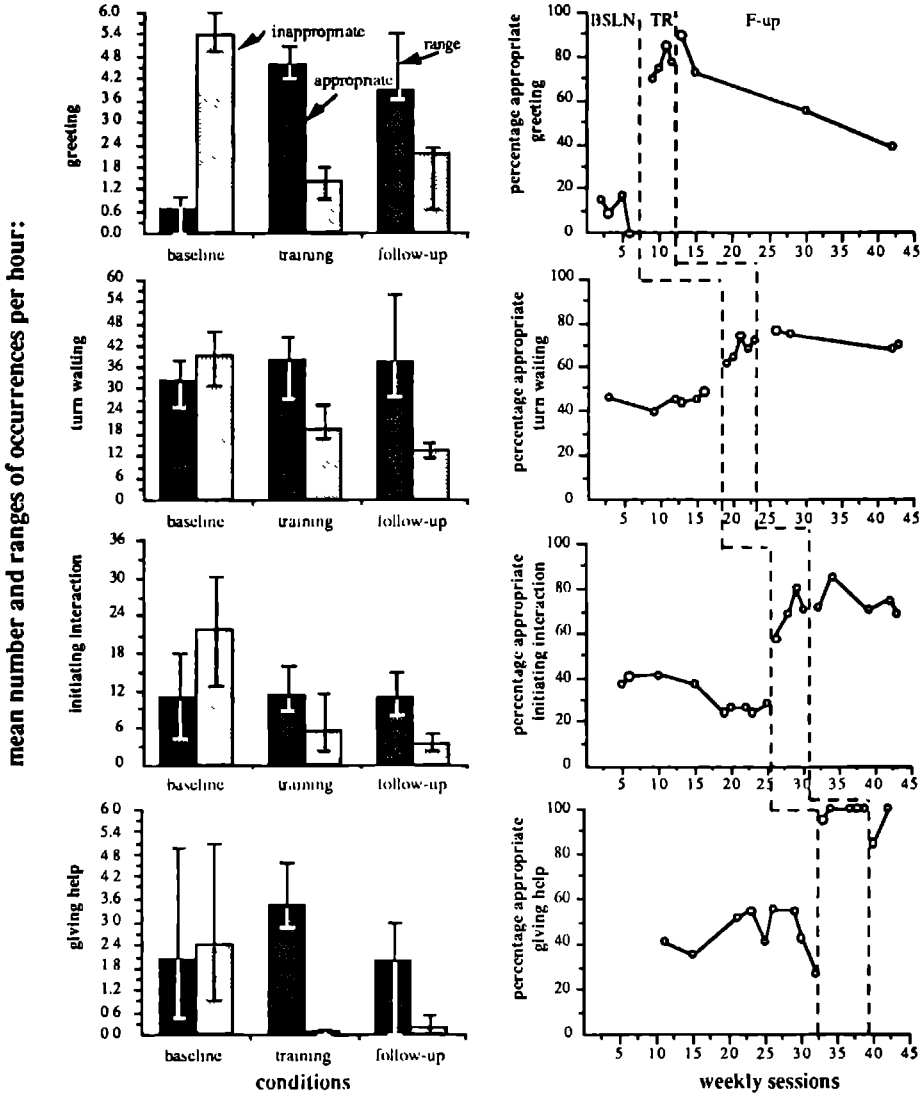

Figure 3.8 The left part of the figure shows the mean number and ranges of occurrences of appropriate and inappropriate instances of the target behaviors per hour across baseline, training, and follow-up The right part shows the multiple-baseline analysis of percentage appropriate target behaviors for the classes

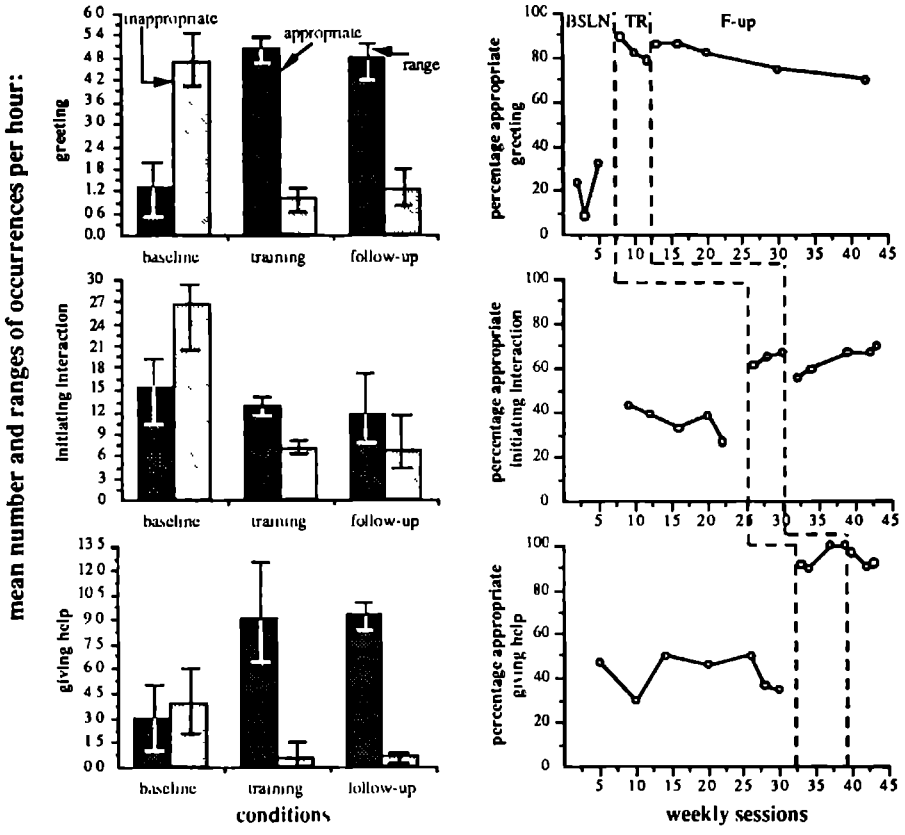

Figure 3.9 The left part of the figure shows the mean number and ranges of occurrences of appropriate and inappropriate instances of the target behaviors per hour across baseline, training, and follow-up. The right part shows the multiple-baseline analysis of percentage appropriate target behaviors for the living groups.

Figures 3.8 and 3.9 show the results of introducing either the FT or PT package sequentially across the four target behaviors in the class and across the three target behaviors on the living group, respectively. Specifically, it is shown (Figure 3.8, left panel) that the mean number of occurrences of appropriate target behaviors in the class increased when training was in effect. During follow-up, the mean number of occurrences of appropriate target behaviors remained above baseline level, except for giving help. A reversed pattern can be seen for the mean number of occurrences of inappropriate target behaviors. This figure decreased when training was in effect and remained below baseline level during follow-up. Correspondingly, the mean percentage appropriate target behaviors in the class

(Figure 3.8, right panel) increased in function of the training and remained above baseline level during follow-up, although the mean percentage appropriate greeting declined. On the living group, the children performed more instances of appropriate greeting and giving help and fewer instances of appropriate initiating interacting during training and follow-up as compared to baseline (Figure 3.9, left panel). Mean number of inappropriate instances of these target behaviors decreased when training was in effect and remained below baseline level during follow-up. The mean percentage appropriate target behaviors on the living group (Figure 3.9, right panel) also increased in function of the training and remained above baseline level during follow-up.

3.3.3 Discussion

The present study shows that a multifaceted training package is effective in improving the social behaviors with twenty 7-to-13 year old deaf children with severe language disabilities and in maintaining training effects during follow-up. The results failed to demonstrate any difference between the Full Training package and the Partial Training package.

The present study is of significance for several reasons. First, the findings of the study corroborate the findings of our previous studies (Rasing & Duker, 1992a, 1992b) concerning the effectiveness of a multifaceted training package on the aquisition and generalization of social behaviors with deaf children with language disabilities. Second, the findings extend the effectivity of the training package to a group of deaf individuals with severe language disabilities and to other social behaviors, that is, greeting and giving help. Third, the present study is of significance from a social validity perspective (Schwartz & Baer, 1991; Wolf, 1978). Prior to the study, teachers and staff members were consulted with about (a) the practicability of the training procedures, and (b) the identification and selection of the target behaviors and their appropriate and inappropriate instances. During the study, these agents used both training packages. Schwartz and Baer (1991) recommended to provide consumers with experiences with and information about different program options. Lastly, after completion of the study, they filled out a social validation questionnaire. Although there were no differences between both training packages in effectivity, two teachers preferred Full Training to Partial Training package. This might be attributed to the teacher's believe that the problem

solving lessons are useful reminders to provide the children with reinforcement and to administer the correction procedure A striking finding was that three teachers and staff members of one living group were not motivated to use either training package. Notwithstanding these findings, both training packages were effective in improving the social behaviors of the children in these classes and in this living group. This may affirm the robustness of both training packages Fourth, we believe that the treatment effects are clinically significant because (a) these effects were recorded in socially relevant situations that had been selected by teachers and residential staff members and (b) the percentages of appropriate target behaviors during baseline and training did not overlap. Fifth, we used a combination of a multiple baseline design and an inverted design to control for possible threats to the internal validity, including history, maturation, multiple-intervention interference, selection, and interaction of selection with other sources of invalidity.

There are, however, several factors that may limit the generality of the findings. First, I used observers who were not familiar with fingerspelling Complexity of behavior and unfamiliarity with subjects' characteristics have been shown to correlate negatively with reliability coefficients (Repp, Nieminen, Olinger, & Brusca, 1988) Due to the nonverbal nature of the target responses and the degree of agreement between the observers could be considered satisfactory, I believe that unfamiliarity with fingerspelling neither influenced the complexity of the target behaviors nor the unfamiliarity with this group of individuals. In future research, however, observers who are familiar with fingerspelling should be used if verbal behaviors are selected for training. A second factor limiting generality of the findings is the small number and the characteristics of individuals involved. Replications of this study with other populations are, therefore, badly needed.

In summary, this study shows the effectiveness of a training package on the acquisition and generalization of social behaviors with deaf children with severe language disabilities Furthermore, this study shows that the cognitive mediation component of such a training package may be withheld

Hoofdstuk 4
Training of Social Behaviors with Language-Disabled Deaf Adolescents

4.0 Summary

In the present study two experiments were conducted in which we assessed the effectiveness of a training package on the acquisition and generalization of five social behaviors with language-disabled deaf adolescents. The training package encompassed modeling, self-monitoring, self-reinforcement, and mediator directed supervision and feedback. Procedures to promote generality of effects and social validity of the procedures were used as well. Target behaviors were initiating interaction, turn waiting, keeping to the subject of conversation, communicating orally, and using correct sentences. Participants of Experiment 1 were four language-disabled deaf adolescents ranging in age from 15 years 4 months to 18 years 5 months. Their oral communication was supplemented by an oral-graphic method. Participants of Experiment 2 were four severely language-disabled deaf adolescents ranging in age from 13 years 5 months to 16 years 1 month. Communication with them was augmented by fingerspelling and written language. Data were collected within a multiple baseline design across behaviors. Results indicated that the training package was effective in improving the performances of all participants. However, increases in percentage of appropriate target behaviors were more substantial for the language-disabled deaf adolescents than for the severely language-disabled deaf adolescents. Maintenance of effects was demonstrated as well.

4.1 Introduction

Various training procedures, including instruction, modeling, group discussion, role-playing, behavior rehearsal, coaching, feedback, homework, and positive reinforcement have been used to remediate social deficits with a variety of client populations (e.g., Amish, Gesten, Smith, Clark, & Stark, 1988; Ammerman, Van Hasselt, Hersen, & Moore, 1989; Bates, 1980; Berler, Gross, & Drabman, 1982; Eisler, Hersen, & Miller, 1974; Gresham & Evans, 1987; Mesibov, 1984; Plienis,

Hansen, Ford, Smith Jr , Stark, & Kelly, 1987, Sacks & Gaylord-Ross, 1989) Regarding remediation of social deficits with hearing-impaired persons, few studies have been conducted to evaluate the effectivity of a number of the above-mentioned procedures (e.g., Antia & Kreimeyer, 1988, Barton & Osborn, 1978, Kreimeyer & Antia, 1988; Lemanek & Gresham, 1984, Lemanek, Williamson, Gresham, & Jensen, 1986, Rasing, in press; Rasing & Duker, 1992a, 1992b).

During the past two decades, behavior therapy has been changed from emphasis on external control of behavior to self-control (Bandura, 1969, Ciminero, Nelson, & Lipinski, 1977; Kazdin, 1974, 1975; Thoresen & Coates, 1976; Thoresen & Mahoney, 1974). A number of reasons for this trend have been suggested (Harchik, Sherman, & Sheldon, 1992, Kazdin, 1975, Mace & Kratochwill, 1988; O'Leary & Dubey, 1979) First, controlling one's own behavior and achieving selected goals are valued and expected by our society Second, agents (i e., teachers, parents, residential staff members, and/or peers) usually fail to provide consequences for the majority of the target behaviors Third, agents may become a cue for performance of the target behavior when administering rewards contingent on behavior, thereby merely enhancing clients' discrimination learning Fourth, clients can easily discriminate between different contingencies across situations. Fifth, a great deal of behavior is covert Lastly, people often prefer self-control.

Three self-control or self-management procedures have been distinguished (a) *self-instruction*, which has been defined as making verbal statements to oneself that prompt, direct, or maintain behavior, (b) *self-monitoring*, which refers to observing, recording, and evaluating one's own behavior, and (c) *self-reinforcement*, which refers to self-administering of rewards contingent on behavior (Mace & Kratochwill, 1988, O'Leary & Dubey, 1979) Kazdin (1974) and McFall (1977) have put forward a number of features of self-monitoring The most interesting features are (a) self-monitoring alone is not sufficient for behavior change, (b) the direction of behavior change will be determined by the valence of the behavior, (c) providing a performance standard or goal, observing information resulting from behavior change (i e , feedback), and reinforcing contingently on self-monitored performance will contribute to behavior change, (d) behavior change

does not depend upon accurate or reliable recording on the part of the client, and (e) highly reliable monitoring of one's own behavior does not ensure behavior change

A variety of self-management procedures have successfully been used with various groups of individuals to modify numerous behaviors As it is beyond the scope of this paper to review the vast body of behavioral literature regarding self-management procedures, see for reviews Harchik, Sherman, and Sheldon (1992), O'Leary and Dubey (1979), and Rosenbaum and Drabman (1979)

Only a few studies evaluated self-management procedures with deaf persons (Morrow, 1985, Schloss, Smith, & Schloss, 1988) Morrow presented three pilot studies (Morrow & Kondritz, 1985, Morrow & Presswood, 1983, 1984) in which different combinations of self-management procedures were effective in decreasing inappropriate behaviors and increasing appropriate behaviors with deaf behavior-disordered adolescents Generalization of training effects to other settings and maintenance of training effects were reported Schloss, Smith, and Schloss (1988) assessed the effectiveness of two training procedures (i e , self-monitoring and feedback), combined with instructions, on the use of emotional adjectives with seven hearing-impaired adolescents, ranging in age from 16 to 22 years Although both procedures were effective, self-monitoring combined with instructions was more effective than feedback combined with instruction In spite of the fact that the finding concerning the relative efficacy of self-monitoring and feedback conflicted with findings of other investigators (Bolstad & Johnson, 1972, Winett, Neale, & Grier, 1979), a self-management procedure was demonstrated to be successful with hearing-impaired adolescents

The purpose of the present study was to extent the evidence concerning the effectivity of self-management procedures with deaf adolescents In the present study we assessed the effectiveness of a training package on the acquisition and generalization of five social behaviors with four language-disabled deaf adolescents and with four severely language-disabled deaf adolescents The training package encompassed modeling, self monitoring, self-reinforcement, and mediator directed supervision and feedback Procedures to promote generality of effects and the social validity of the procedures were used as well

4.2 Experiment 1

4.2.1 Method

4.2.1.1 Subjects and settings

Four language-disabled deaf adolescents attending the school of a residential facility for the deaf participated. The three girls and one boy were arbitrarily chosen from two different classes. Class 1 contained four girls. Class 2 contained two girls and one boy. The three girls resided in two living groups at the institution The boy lived with his parents The participants, ranging in age from 15 years 4 months to 18 years 5 months (M = 17 years 4 months), were diagnosed as dysphatic with severe to profound hearing losses Each participant had an average level of intelligence as measured by a standard test (Raven) Their oral communication was supplemented by an oral-graphic method Participants' vocabulary age (Peabody Picture Vocabulary Test) ranged from 3 years 9 months to 8 years 1 month (M = 5 years 8 months).

The ages of the two consulting teachers (one female and one male) were 51 and 39 years and they had been qualified teachers for 12 and 15 years, respectively The ages of the four female residential staff members involved ranged from 25 to 34 years and they had been certified for 5 to 17 years The two psychologists were 36 and 50 years old and had been certified for 6 and 11 years, respectively. Teachers and psychologists had completed an in-service training

4.2.1.2 Response definitions

In consultation with teachers and residential staff, five target behaviors were selected and the appropriate and inappropriate instances of these target behaviors were defined The following behaviors were selected (a) initiating interaction, (b) turn waiting, (c) keeping to the subject of conversation, (d) communicating orally, and (e) using correct sentences.

The following instances of target behaviors were recorded.

Appropriate instances of target behaviors Initiating interaction referred to the participant seeking a person's attention by (a) raising a hand, (b) calling a hearing person's name once (e g., the teacher or residential staff member), (c) tapping a hearing or a deaf person on the arm once or twice (e g., the teacher or another

adolescent), or (d) asking a question once. *Turn waiting* involved the participant facing the person involved (i.e., the teacher, a residential staff member, another adolescent), (a) asking a person's attention once, but the participant refrains from interrupting others and waits; (b) the participant refrains from speaking before another person is finished; and (c) the participant refrains from speaking before it is silent. *Keeping to the subject of conversation* was defined as the participant's utterance being related to (a) the subject of conversation or (b) the utterance of the preceding speaker. *Communicating orally* referred to the participant expressing himself/herself in spoken words and *using correct sentences* referred to the participant using sentences containing a subject and a verb.

Inappropriate instances of target behaviors. Initiating interaction referred to the participant seeking a person's attention by showing one or more of the following behaviors: (a) Calling a person's name more than once, (b) tapping a person on the arm more than twice, (c) touching a person at other places but the arm, (d) screaming, (e) tapping on the desk, (f) hand flapping, (g) pulling someone's clothes, (h) stamping the ground, and (i) taking a stand in front of another person's face. For *turn waiting* this was defined as: (a) Participant starting to speak when another person is speaking, (b) participant starting to speak when it is not silent, (c) participant interrupting when another person is on-task, (d) participant failing to face the person who is speaking, and (e) participant sagging in his/her chair. *Keeping to the subject of conversation* was defined as the participant's utterance being unrelated to (a) the subject of conversation and (b) the utterance of the preceding speaker. *Communicating orally* referred to the participant expressing himself/herself in (a) signs or (b) sounds. *Using correct sentences* referred to the participant using sentences not containing (a) a subject or (b) a verb.

4.2.1.3 Data collection and interobserver agreement

Initiating interaction was recorded using an event recording procedure. Turn waiting, keeping to the subject of conversation, communicating orally, and using correct sentences were recorded using an 8-s partial interval recording procedure. The five target behaviors were recorded in the classroom during grammar lessons and in the participants' dayroom during dinner. Each recording session lasted 20 min and was videotaped. In an attempt to reduce reactivity, the camera (a Sony®

CCD-V90E) was present in both settings for two weeks prior to baseline recordings.

Data were collected by two primary observers using the HyperCard program for the MacIntosh™computer. Data collection did not begin until 90% interobserver agreement for the target behaviors had been attained. As an attempt to control for observer drift and bias (Kazdin, 1977a) the following measures were taken: (a) the primary observers were kept naive with respect to the experimental hypothesis; (b) the primary observers were uninformed as to which experimental phase was in effect at a given time; (c) preceding each recording session, the observers read the response definitions; and (d) the primary observers never received feedback on the reliability of their scoring.

Interobserver agreement was assessed on an interval-by-interval basis. Reliability checks were conducted in 43.2% of the recording sessions and were approximately equally distributed across the three target behaviors and across the experimental phases. Percentage of agreement between observers was calculated by dividing the number of agreements by the total number of agreements plus disagreements and multiplied by 100. For initiating interaction and turn waiting, the mean percentages agreement between observers were 84.2 (range: 0 - 100) and 81.3 (range: 62.4 - 100), respectively. The mean percentage agreement between observers was 75.6 (range: 0 - 92.3) for keeping to the subject, 78.8 (range: 21.0 - 100) for communicating orally, and 69.6 (range: 14.7 - 93.6) for using correct sentences.

4.2.1.4 Experimental design

A multiple baseline design across target behaviors was employed to assess the functional relationship between training and changes in the frequencies of the five target behaviors. Communicating orally and using correct sentences were trained simultaneously. Preceding data collection, teachers, residential staff, and parents had been informed about which target behaviors were selected for training, in order to assess the differential effectiveness of training these behaviors.

4.2.1.5 Procedure

Baseline. This phase was in effect for seven weeks for initiating interaction, ten weeks for turn waiting, nineteen weeks for keeping to the subject of the

conversation, and twenty-two weeks for communicating orally and using correct sentences. One week preceding training of each target behavior, the first author handed teachers and residential staff (a) the lessons regarding the target behavior in training, (b) the list of appropriate and inappropriate instances of the target behavior, and (c) the materials to be used for self-management.

Training. This phase was in effect for three weeks for each target behavior. The list of appropriate and inappropriate instances of the target behavior and a picture of the self-management procedure were posted in front of the classroom and on the living group floor.

Adolescent training consisted of (a) three one-hour lessons given by the teacher and (b) a self-management procedure. First, during the first lesson, the teacher prompted the participants to emit appropriate and inappropriate instances of the target behavior in training and to discuss a number of reasons for showing the target behavior. Furthermore, the teacher provided the participants with verbal and modeled instruction about the self-management procedure. That is, the teacher practiced the procedure with each participant during two or three role-play scenes. Following this, two problem-solving lessons were given, once a week. During a problem-solving lesson, the participants read a script of a situation in which the target behavior had to occur. The teacher then prompted the participants to discuss the situation using the following five questions: (a) What is the problem? (b) How can I handle it? (c) What are the consequences of the responses for the previous question? (d) How should I respond to it? and (e) Did I choose a correct response? The teacher instructed one or two participants to role play their responses to the fourth question, and following this, the teacher asked the remaining participants whether it was an appropriate response or not. After the teacher had emphasized that there is usually more than one appropriate response to a problem, the participants selected the most appropriate one. Finally, the teacher prompted the participants to present their own experiences regarding the target behavior.

Second, at the beginning of a series of conversations, teachers and staff members verbally prompted each participant to carry out the self-management procedure. A conversation was defined as a situation in which persons express themselves in spoken words. The participants monitored their own target behaviors and recorded

their performances by answering a few questions about these target behaviors on five-point scales. If they had recorded their performances up to five conversations, they calculated the mean number of points per question. At school, they provided themselves with the obtained mean number of tokens. If they had earned 10 tokens, the participants provided themselves with a back-up reinforcer. When the participants were with their living group, a group contingency was in effect, in that they provided their living group with the mean number of tokens. If the joint group members had earned 30 tokens, they rewarded themselves with a group activity (e.g., going to a movie). Teachers and staff members intermittently monitored and recorded the performances of the participants. If participant's recording of a conversation matched the recording of the teacher or a staff member, (s)he would earn one additional token. To accomplish maintenance of training effects (Kazdin, 1977b, 1982; Stokes & Osnes, 1989), (a) the number of conversations each day that needed to be monitored gradually thinned from five to zero and (b) the timing of the verbal prompt was gradually altered from the beginning to the end of a conversation. For this purpose, teachers and residential staff were handed a diagram of (a) the number of conversations that needed to be monitored by the participants each day, (b) the number of prompts that preceded the conversations each day, and (c) the number of prompts that followed the conversations each day.

Supervision and feedback consisted of two components. First, the psychologist supervised each teacher while teaching the lessons and provided them with feedback. For this purpose, the psychologist attended one lesson and provided the teacher with verbal performance feedback during a 15-min meeting. Second, the psychologist was present at school and on the living group, once each week, and discussed the self-management procedure with teachers and staff members.

Follow-up. During this phase formal training was discontinued; however, participants were intermittently prompted to monitor their own target behavior, to record their performances, and to calculate the mean number of points per question simultaneously with the new target behavior in training. The list of appropriate and inappropriate instances of the target behavior and the picture of the self-management procedure remained in place. Follow-up was in effect for thirty-four weeks for initiating interaction, thirty-one weeks for turn waiting, twenty-two

weeks for keeping to the subject of the conversation, and nineteen weeks for communicating orally and using correct sentences.

4.2.2 Results

Figure 4.1 presents the joint mean number and ranges of occurrences of appropriate and inappropriate instances of the target behaviors per hour across the experimental conditions for the classes 1 and 2 and the mean percentages appropriate target behaviors during the experimental conditions for Class 1 and Class 2. Figure 4.2 shows the joint mean number and ranges of occurrences of appropriate and inappropriate instances of the target behaviors per hour across the experimental conditions and the percentages appropriate target behaviors during the experimental conditions for the living groups.

The mean number of occurrences of appropriate target behaviors in the class increased while the mean number of occurrences of inappropriate target behaviors in the class decreased when training was in effect (Figure 4.1, left panel). During follow-up, the mean number of occurrences of appropriate initiating interaction and appropriate keeping to the subject further increased. For turn waiting, communicating orally, and using correct sentences, the mean number of occurrences of appropriate instances remained above baseline levels, whereas the mean number of occurrences of inappropriate instances of all target behaviors remained below baseline levels. The mean percentage appropriate target behaviors (Figure 4.1, right panel) increased when training was in effect and remained at training levels during follow-up for both classes, except for initiating interaction for Class 1 for which mean percentage appropriate instances decreased, but nevertheless remained above baseline level.

For the living group, a similar pattern can be distinguished in that the mean number of occurrences of appropriate instances of the target behaviors increased, while the mean number of occurrences of inappropriate instances of the target behaviors decreased when training was in effect (Figure 4.2, left panel). During follow-up, the mean number of occurrences of appropriate instances of turn waiting, keeping to the subject, and using correct sentences further increased, while the mean number of occurrences of appropriate instances of initiating interaction and communicating orally remained at training levels. For initiating interaction and turn

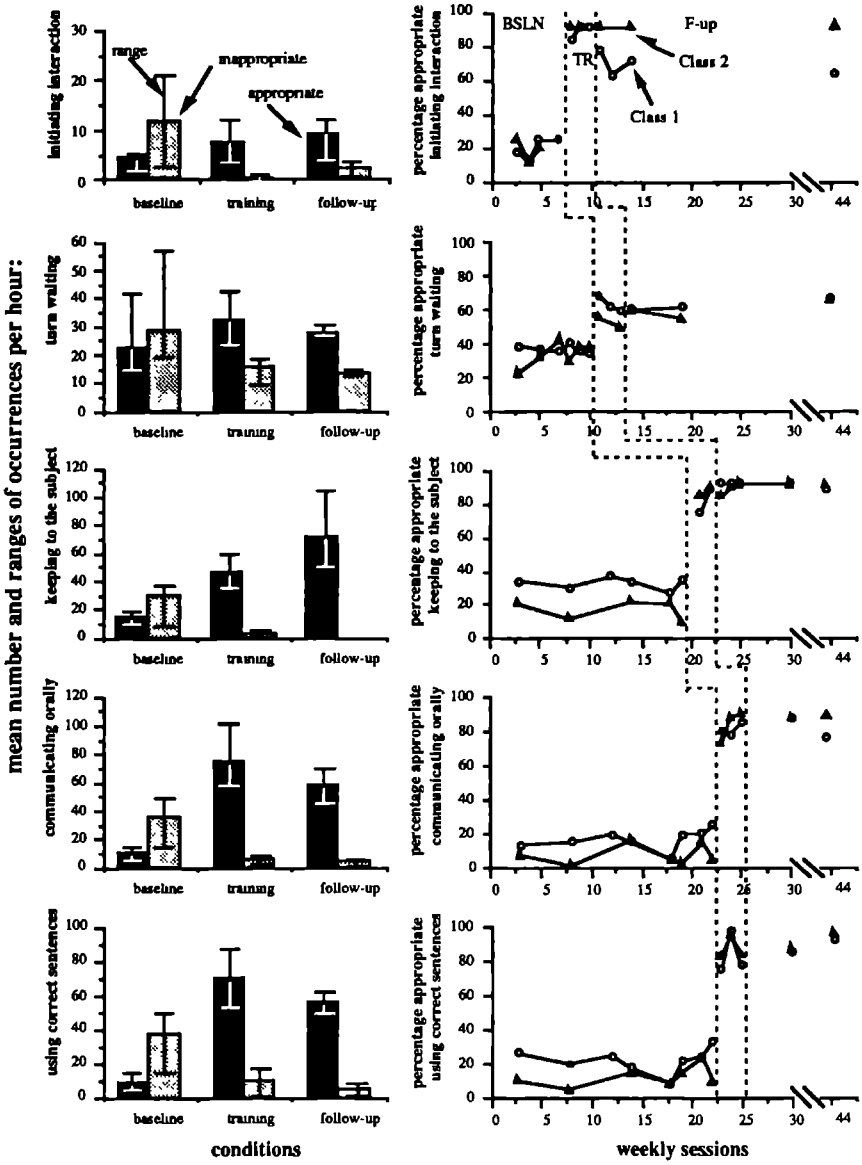

Figure 4.1 The left part of the figure shows the joint mean number and ranges of occurrences of appropriate and inappropriate instances of the target behaviors per hour across baseline, training, and follow-up for the classes 1 and 2. The right part shows the multiple-baseline analysis of percentage appropriate target behaviors for the classes 1 and 2.

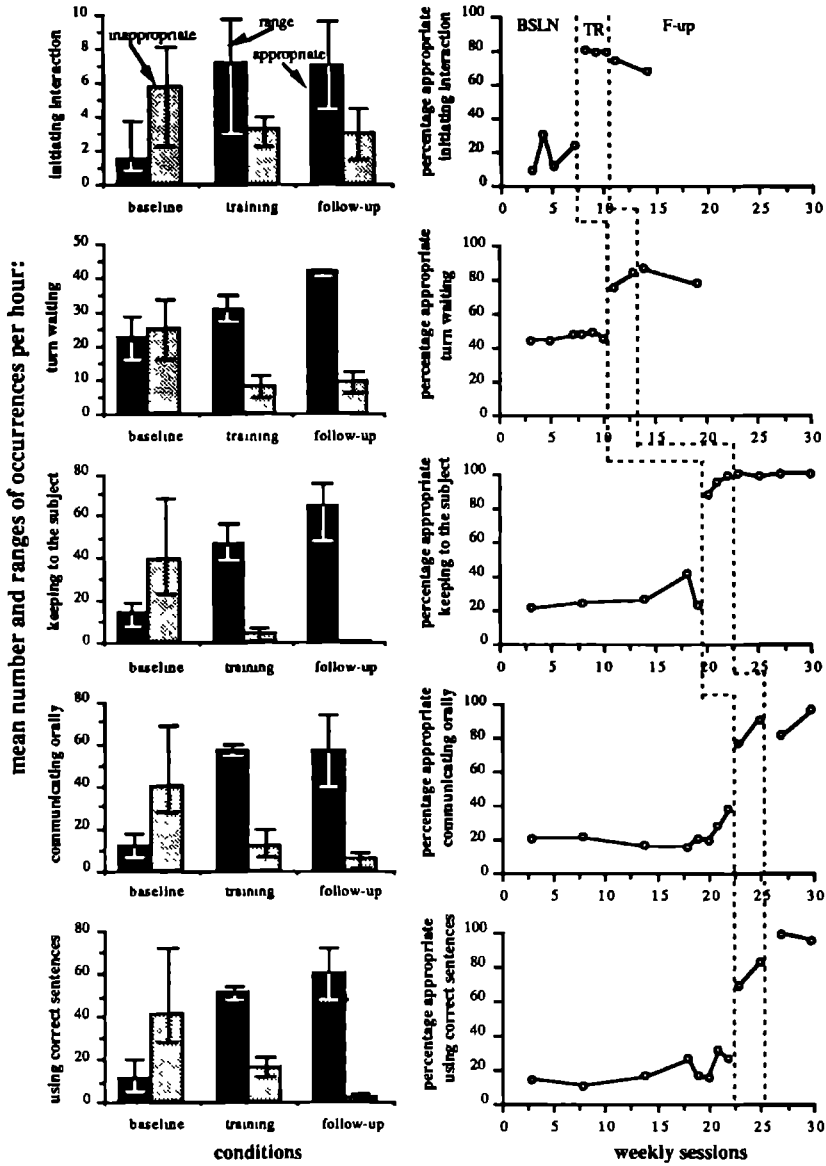

Figure 4. 2 The left part of the figure shows the joint mean number and ranges of occurrences of appropriate and inappropriate instances of the target behaviors per hour across baseline, training, and follow-up for the living groups. The right part shows the multiple-baseline analysis of percentage appropriate target behaviors for the living groups.

waiting, the mean number of occurrences of inappropriate instances remained at training levels. For the other three target behaviors, this figure further decreased. The mean percentage appropriate target behaviors on the living group (Figure 4.2, right panel) also increased in function of the training and remained at training levels during follow-up.

The data of the individual participants are presented in Table 4.1. For participant 1, the grand mean percentage appropriate target behavior across the five target behaviors increased from 31.7 (range: 22.6 - 43.2) during baseline to 83.8 (range: 63.9 - 100) during training. During follow-up, the grand mean percentage appropriate target behavior was 84.7 (range: 73.3 - 100). The mean percentages appropriate target behaviors increased for turn waiting, keeping to the subject, and using correct sentences and slightly decreased for initiating interaction and communicating orally. For participant 2, the grand mean percentage appropriate target behavior across the five target behaviors in the class was 33.8 (range: 24.4 - 45.9) during baseline and 89.1 (range: 76.7 - 96.7) during training. This value was 87.7 (range: 68.8 - 100) during follow-up. Keeping to the subject, communicating orally, and using correct sentences improved while initiating interaction and turn waiting deteriorated as compared with the training condition. On the living group, participant 2 improved all five target behaviors during training and continued to

Table 4.1

Mean Percentage Appropriate Target Behaviors during the Conditions of Baseline, Training, and Follow-up for Participants 1 through 4

	Initiating Interaction			Turn Waiting			Keeping to the Subject		
Participant	BSLN	TX	F-up	BSLN	TX	F-up	BSLN	TX	F-up
				Class 1					
1	27 4	100	79 7	43 2	63 9	73 3	41 0	87 5	100
2	29 7	95 8	72 4	45 9	76 7	68 8	40 0	89 8	100
				Class 2					
3	30 6	100	100	43 4	59 5	61 8	21 4	96 4	100
4	12 5	100	100	40 3	61 7	70 7	33 4	92 9	93 7
				Living Group					
2	06 2	58 9	68 3	47 2	79 2	84 8	24 8	100	98 9
3	22 2	80 6	66 7	47 7	66 7	88 0	26 6	90 5	100
4	46 7	100	100	45 2	86 1	74 5	29 8	92 3	100

Table 4.1 (continued)

	Communicating Orally			Using Correct Sentences		
Participant	BSLN	TX	F-up	BSLN	TX	F-up
			Class 1			
1	24 2	82 8	82 6	22.6	84 9	88 0
2	28 9	96 7	100	24 4	86 7	97 5
			Class 2			
3	15 7	93 8	97 5	13 2	89 5	96 2
4	19 0	90 5	96 2	23 7	94 6	88 5
			Living Group			
2	18 6	70 3	78 3	22 6	65 9	92 5
3	23 7	87 5	92 1	18 7	80 7	100
4	23 7	94 6	94 5	19 1	83 8	100

Note BSLN = Baseline, TX = Training, F-up = Follow up

improve four of these ones during follow-up. For participant 3, the grand mean percentage appropriate target behavior across the five target behaviors in the class was 24.9 (range: 13.2 -43.4) during baseline and 87.8 (range: 59.5 - 100) during training. The grand mean percentage increased to 91.1 (range: 61.8 - 100) during follow-up. The target behaviors improved, except initiating interaction that had already attained a 100% level during training. On the living group, the mean percentage appropriate target behaviors increased in function of the training. The mean percentages appropriate turn waiting, keeping to the subject, communicating orally, and using correct sentences further increased, whereas the mean percentage appropriate initiating interaction slightly decreased during follow-up. For participant 4, the grand mean percentage appropriate target behavior across the five target behaviors increased from 25.8 (range: 12.5 - 40.3) during baseline to 87.9 (range: 61.7 - 100) during training, and further increased to 89.8 (range: 70.7 - 100) during follow-up. On the living group, participant 4 improved all five target behaviors during training. During follow-up, she improved her performances of keeping to the subject and using correct sentences, whereas she failed to maintain her performance of turn waiting.

4.2.3 Discussion

This experiment suggests that a training package including self-management procedures, organizational behavioral management procedures, procedures to promote generality of effect, and procedures to promote social validity, may be

effective in increasing social behaviors with language-disabled deaf adolescents. The participants increased their percentages appropriate initiating interaction, turn waiting, keeping to the subject of conversation, communicating orally, and using correct sentences during grammar lessons and dinner as a result of the training.

For the participants as a group, maintenance of training effects was also demonstrated for all five target behaviors during grammar lessons and dinner, although there were differences between classes as well as between individuals. During grammar lessons, the percentages appropriate initiating interaction for the participants of Class 1 decreased during follow-up, whereas these percentages for the participants of Class 2 remained at training levels during follow-up. Because this is the only difference between both classes, merely involving the first target behavior, we believe that the difference may be due to an inconsistent administration of the training procedure. Individual differences strewed across the target behaviors. For each target behavior, the percentage appropriate target behavior increased during follow-up for at least three participants during grammar lessons, except for initiating interaction, and for at least two participants during dinner. Furthermore, percentage appropriate instances did not decrease for more than two target behaviors during grammar lessons, and for more than one target behavior during dinner for any participant. We believe that the individual differences reflect a normal variation of maintaining of training effects with adolescents.

The findings of Experiment 1 provide some evidence for the effectiveness of the training package with language-disabled deaf adolescents. Experiment 2 was undertaken in order to assess the effectiveness of the training package for deaf adolescents with severe language disabilities and for whom the main communication code was fingerspelling.

4.3 Experiment 2

4.3.1 Method

4.3.1.1 Subjects and settings

Four deaf adolescents with severe language disabilities attending the school of a residential facility for the deaf participated. The three girls and one boy were

arbitrarily chosen from two different classes. Class 3 contained two girls and three boys. Class 4 contained two girls and two boys. The three girls and one boy resided in two living groups at the institution. The participants, ranging in age from 13 years 5 months to 16 years 1 month (M = 15 years), were diagnosed as dysphatic with severe to profound hearing losses. Each participant had an average level of intelligence as measured by standard tests. Communication with them was augmented by fingerspelling and written language. Participants' vocabulary age (Peabody Picture Vocabulary Test) ranged from 5 years to 6 years 9 months (M = 5 years 9 months).

The ages of the two consulting teachers (two males) were 38 and 42 years and they had been qualified teachers for 15 years. During the study, the youngest teacher quit and was succeeded by a 48 years old teacher, who had been qualified for 24 years. The ages of the six residential staff members (five females and one male) involved ranged from 23 to 41 years. They had been certified for 6 months to 21 years. The male psychologist was 42 years old and had been certified for 3 years. Teachers, residential staff members, and psychologist had completed an in-service training, except for one residential staff member.

4.3.1.2 Response definitions

In consultation with teachers and residential staff, five target behaviors were selected and the appropriate and inappropriate instances of these target behaviors were defined. The following behaviors were selected: (a) initiating interaction, (b) turn waiting, (c) keeping to the subject of conversation, (d) communicating orally, and (e) using correct sentences.

The following instances of target behaviors were recorded.

Appropriate instances of target behaviors. Initiating interaction referred to the participant seeking a person's attention by (a) raising a hand, (b) calling a hearing person's name once (e.g., the teacher or residential staff member), (c) tapping a hearing or a deaf person on the arm once or twice (e.g., the teacher or another adolescent), or (d) asking a question once. *Turn waiting* involved the participant facing the person involved (i.e., the teacher, a residential staff member, another participant), (a) asking a person's attention once, but the participant refrains from interrupting others and waits; (b) the participant refrains from speaking or

fingerspelling before another person is finished; and (c) the participant refrains from speaking or fingerspelling before it is silent. *Keeping to the subject of conversation* was defined as the participant's utterance (i.e., spoken or fingerspelt) being related to (a) the subject of conversation or (b) the utterance of the preceding speaker or fingerspeller. *Communicating orally* referred to the participant expressing himself/herself in spoken words and *using correct sentences* referred to the participant using sentences containing a subject and a verb.

Inappropriate instances of target behaviors. Initiating interaction referred to the participant seeking a person's attention by showing one or more of the following behaviors: (a) Calling a person's name more than once, (b) tapping a person on the arm more than twice, (c) touching a person at other places but the arm, (d) screaming, (e) tapping on the desk, (f) hand flapping, (g) pulling someone's clothes, (h) stamping on the ground, and (i) taking a stand in front of another person's face. For *turn waiting* this was defined as: Participant (a) starting to speak or to fingerspell when another person is speaking or fingerspelling, (b) starting to speak or to fingerspell when it is not silent, (c) interrupting when another person is on-task, (d) failing to face the person who is speaking or fingerspelling, and (e) sagging in his/her chair. *Keeping to the subject of conversation* was defined as the participant's utterance (i.e., spoken or fingerspelt) being unrelated to (a) the subject of conversation and (b) the utterance of the preceding speaker or fingerspeller. *Communicating orally* referred to the participant expressing himself/herself in (a) signs or (b) sounds. *Using correct sentences* referred to the participant using sentences not containing (a) a subject or (b) a verb.

4.3.1.3 Data collection and interobserver agreement

The recording procedures and data collection were identical to Experiment 1. Initiating interaction and turn waiting were recorded in the classroom during grammar lessons and in participants' dayroom during dinner. The other three target behaviors were only recorded in the classroom during grammar lessons.

Interobserver agreement was assessed on an interval-by-interval basis. Reliability checks were conducted in 37.4% of the recording sessions and were approximately equally distributed across the three target behaviors and across the experimental phases. Percentage of agreement between observers was calculated by dividing the

number of agreements by the total number of agreements plus disagreements and multiplied by 100. The mean percentage agreement between observers was 82.6 (range: 23.4 - 100) for initiating interaction, 84.6 (range: 58.4 - 100) for turn waiting, 80.4 (74.1 - 92.3) for keeping to the subject, 71.0 (range: 45.8 - 79.4) for communicating orally, and 72.3 (range: 34.6 - 83.1) for using correct sentences.

4.3.1.4 Experimental design

The design was identical to Experiment 1.

4.3.1.5 Procedure

Baseline. This phase was in effect for nine weeks for initiating interaction, twenty weeks for turn waiting, twenty-three weeks for keeping to the subject of the conversation, and twenty-seven weeks for communicating orally and using correct sentences. One week preceding training of each target behavior, the first author handed teachers and residential staff (a) the lessons regarding the target behavior in training, (b) the list of appropriate and inappropriate instances of the target behavior, and (c) the materials to be used for self-management.

Training. This phase was in effect for three weeks for each target behavior. The list of appropriate and inappropriate instances of the target behavior and a picture of the self-management procedure were posted in front of the classroom and on the living group floor.

Adolescent training consisted of (a) three one-hour lessons given by the teacher and (b) a self-management procedure. The three one-hour lessons given by the teacher were identical to those in Experiment 1.

The self-management procedure was slightly different from the procedure of Experiment 1 for the last three target behaviors as during training of the first two target behaviors, teachers and staff members indicated that the procedure so far interfered with their regular activities. At the beginning of one conversation each day, teachers and staff members verbally prompted the participants to carry out the self-management procedure. The participants monitored their own target behaviors and recorded their performances by answering a few questions about these target

behaviors on five-point scales. If the participants had recorded their performances up to three conversations, they calculated the mean number of points per question. At school, they provided themselves with the obtained mean number of tokens. If they had earned 10 tokens, the participants provided themselves with a back-up reinforcer. When the participants were with their living group, a group contingency was in effect, in that they provided their living group with the obtained mean number of tokens. If the joint group members had earned 30 tokens, they rewarded themselves with a group activity (e.g., going to a movie). Teachers and staff members always monitored and recorded the performances of the participants. If the participant's recording of a conversation matched the recording of the teacher or a staff member, (s)he would earn one additional token. In an attempt to accomplish maintenance of training effects, the timing of the verbal prompt was gradually altered from the beginning to the end of the conversation. Furthermore, if a participant showed an appropriate instance of the target behavior during school hours or while with their living group, the teacher or staff member provided him or her with verbal praise.

Supervision and feedback were identical to Experiment 1.

Follow-up. Formal training was discontinued. However, participants were intermittently prompted to monitor their own target behavior, to record their performances, and to calculate the mean number of points per question simultaneously with the new target behavior in training. The list of appropriate and inappropriate instances of the target behavior and the picture of the self-management procedure remained in place.

Follow-up was in effect for thirty-two weeks for initiating interaction, twenty-one weeks for turn waiting, seventeen weeks for keeping to the subject of the conversation, and fourteen weeks for communicating orally and using correct sentences.

4.3.2 Results

Figure 4.3 shows the joint mean number and ranges of occurrences of appropriate and inappropriate instances of the target behaviors per hour across the experimental

conditions and the mean percentages appropriate target behaviors during the experimental conditions for Class 3 and Class 4.

The figure (left panel) shows an increase in the mean number of occurrences of the appropriate instances of each target behavior and a decrease in the mean number of occurrences of inappropriate instances of each target behavior in function of the training. During follow-up, the mean number of occurrences of appropriate keeping to the subject further increased, whereas for turn waiting, communicating orally, and using correct sentences this figure decreased. The mean number of occurrences of inappropriate instances of the target behaviors further decreased. Figure 4.3 (right panel) also shows the mean percentages appropriate target behaviors for Class 3 and Class 4, separately. For Class 3 the mean percentages appropriate initiating interaction, keeping to the subject, and communicating orally increased during training, while the mean percentages appropriate turn waiting and using correct sentences remained at baseline level. During follow-up, the mean percentages appropriate target behaviors slightly decreased, except for initiating interaction, that increased. For Class 4, mean percentage appropriate initiating interaction failed to increase in function of the training. During follow-up, however, this figure increased steadily, but dropped at week 44. For the other four target behaviors, the mean percentages appropriate target behaviors increased when training was in effect and remained at training levels or further increased during follow-up.

Table 4.2 shows the data of the individual participants. For participant 5, the grand mean percentage appropriate target behavior across the five target behaviors in the class increased from 35.2 (range: 14.0 - 53.5) during baseline to 45.3 (range: 23.4 - 62.3) during training. During follow-up, this percentage was 55.0 (range: 36.4 - 77.7). The mean percentages appropriate initiating interaction and using correct sentences increased, whereas the mean percentages appropriate turn waiting, keeping to the subject, and communicating orally decreased during follow-up. On the living group, the mean percentage appropriate initiating interaction decreased during training and further decreased during follow-up. A reverse pattern can be identified for turn waiting. For participant 6, the grand mean percentage appropriate target behavior across the five target behaviors in the class increased from 31.5 (range: 12.7 - 41.2) during baseline to 48.8 (range: 25.9 - 63.3) during training.

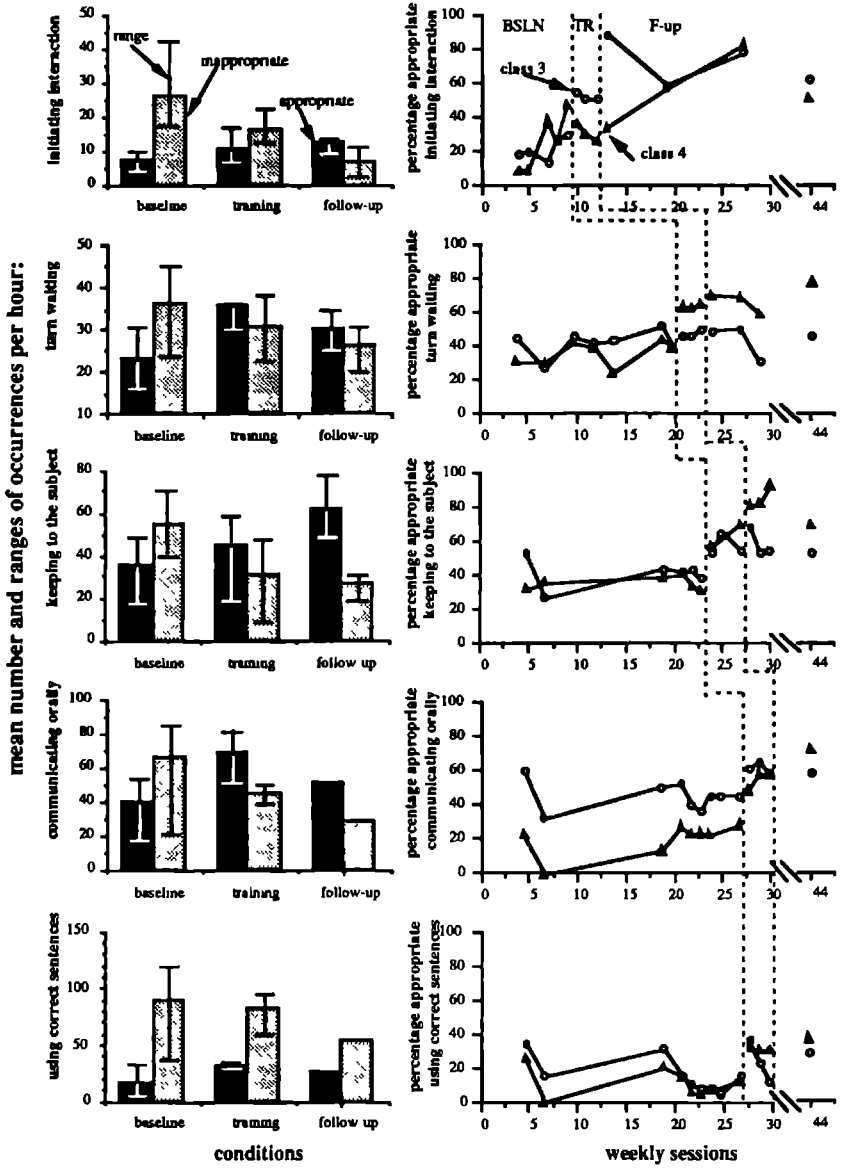

Figure 4.3 The left part of the figure shows the joint mean number and ranges of occurrences of appropriate and inappropriate instances of the target behaviors per hour across baseline, training, and follow-up for the classes 3 and 4. The right part shows the multiple-baseline analysis of percentage appropriate target behaviors for the classes 3 and 4.

This value was 49.8 (range: 23.5 - 69.0) during follow-up. Mean percentages appropriate turn waiting, communicating orally, and using correct sentences decreased during follow-up. On the living group, participant 6 improved initiating interaction and turn waiting during training and continued to improve turn waiting during follow-up. For participant 7, the grand mean percentage appropriate target behavior across the five target behaviors in the class was 19.6 (range: 7.6 - 33.4) during baseline, 48.1 (range: 24.6 - 65.0) during training, and 63.4 (range: 44.4 - 81.2) during follow-up. For all five target behaviors, the mean percentage appropriate target behavior increased in function of the training and further increased during follow-up. On the living group, a similar pattern can be identified; the mean percentages appropriate initiating interaction and turn waiting increased in function of the training and further increased during follow-up. For participant 8, the grand mean percentage appropriate target behavior across the five target behaviors increased from 32.0 (range: 18.7 - 38.4) during baseline to 51.4 (range: 31.7 - 66.2) during training, and further increased to 62.6 (range: 14.3 - 86.0)

Table 4.2

Mean Percentage Appropriate Target Behaviors during the Conditions of Baseline, Training, and Follow-up for Participants 5 through 8

	Initiating Interaction			Turn Waiting			Keeping to the Subject		
Participant	BSLN	TX	F up	BSLN	TX	F-up	BSLN	TX	F-up
				Class 1					
5	14 0	30 0	77 7	43 8	49 5	47 8	43.2	61 4	58 8
6	22 4	54 5	69 0	40 7	44 0	40 2	41 2	56 3	57 7
				Class 2					
7	12 0	24 6	47 4	32 1	63 1	71 6	33 4	65 0	81 2
8	34 6	39 3	73 6	36 5	66 2	67 8	38 4	62 5	86 0
				Living Group					
5	30 8	25 4	12 8	45 0	66 6	92 7			
6	30 9	63 9	62 6	45 5	75 8	82 9			
7	11 1	20 7	38 3	44 3	69 2	82 6			

Table 4.2 (continued)

	Communicating Orally			Using Correct Sentences		
Participant	BSLN	TX	F-up	BSLN	TX	F-up
			Class 1			
5	53 5	62 3	54 5	21.3	23 4	36 4
6	40 5	63 3	58 8	12 7	25 9	23 5
			Class 2			
7	13 0	55 6	72 2	7.6	32 2	44 4
8	31 9	57 1	71 4	18 7	31 7	14 3

Note BSLN = Baseline, TX = Training; F-up = Follow-up

during follow-up. During follow-up, the mean percentage appropriate using correct sentences decreased below baseline level, whereas this percentage further increased for the other four target behaviors.

4.3.3 Discussion

The findings of Experiment 2 replicate and extent the evidence concerning the effectiveness of the training package for deaf adolescents with severe language disabilities. It should be noted, however, that the training package was not as effective as in Experiment 1. For the participants of Class 3 mean percentages appropriate target behaviors hardly increased during the training, except for initiating interaction, and decreased for three target behaviors during follow-up. For the participants of Class 4, the mean percentages appropriate target behaviors increased in function of the training, except for initiating interaction, and remained at training levels during follow-up. However, increases in mean percentages appropriate target behaviors during training were not as substantial as for the participants in Experiment 1.

Apart from differences in the effectiveness of the training package between both experiments, there are differences in the effectiveness of the training packages between Class 3 and Class 4. First, increases in percentages appropriate target behaviors during training for Class 4 were larger than for Class 3, except for initiating interaction. Second, during follow-up, mean percentages appropriate target behaviors remained at training levels or decreased for the participants of Class 3, but increased for the participants of Class 4. The findings for Class 3 may be attributed to the fact that the teacher quit his position and was succeeded by a teacher, who was insufficiently informed as to the participants' manner of

communication (i.e., fingerspelling). The findings for initiating interaction, the target behavior trained by the first teacher, as compared to the findings of the other four target behaviors, may underline the plausibility of this hypothesis.

Lastly, visual examination of the data suggests that changes in the self-management procedure following training of the second target behavior failed to have any negative effect on participants' performance. This may imply a robust functional relationship between the independent and dependent variable.

4.4 General discussion

The results of the experiments of the present study are consistent with those obtained by Morrow and Kondritz (1985), Morrow and Presswood (1983, 1984), and Schloss, Smith, and Schloss (1988) concerning the effectiveness of self-management procedures with hearing-impaired persons. In the present study, a multifaceted training package, including self-management procedures, was successful in improving social behaviors with eight (severely) language disabled deaf adolescents ranging in age from 13 years 5 months to 18 years 5 months. The effects were maintained for all target behaviors throughout a nineteen-to-thirty-four weeks follow-up period for Experiment 1 and throughout a fourteen-to-thirty-two weeks follow-up period for Experiment 2. As in our previous studies (Rasing, in press; Rasing & Duker, 1992a, 1992b), we believe that the procedures to promote generality of effects have caused the maintenance of effects. More specifically, the use of identical training procedures and materials in various settings, the selection of the target behaviors by teachers and residential staff, the gradual thinning of the number of conversations each day that needed to be monitored, the gradual alteration of the timing of the verbal prompt from the beginning to the end of the conversation, and the intermittent self-recording of the behaviors throughout the follow-up period, may have been effective in this regard.

Although the training package was effective in improving the social behaviors of the adolescents, these findings must be interpreted cautiously. First, the training package was differentially effective for the two groups of participants. The training effects of Experiment 1 are clinically significant because there were very large increases in percentages appropriate target behavior when training was in effect,

and training effects were recorded in socially relevant situations. We believe, however, that the training effects of Experiment 2 are not clinically significant because there were only modest increases in percentages appropriate target behavior when the training was in effect. One might argue that the differences between the results of both experiments might be due to differences in the manner of communication. This possibility should be rejected, however, because (a) baseline performances were similar for the participants of both experiments, (b) the mean vocabulary age of the participants of Experiment 2 was higher than that of the participants of Experiment 1, and (c) the self-management procedures were adjusted to adolescents' communication level. Another explanation for the results of Experiment 2 might be that the procedure interfered with regular activities for the first two target behaviors. Therefore, teachers and staff members might have been less motivated to administer the procedures concurring with the experimental plan. Consequently, this might have had an effect on the training of the last three target behaviors too. Anecdotal information has confirmed loose training. Nevertheless, teachers and residential staff members of Experiment 2 requested authors' continuation of training of social behaviors. Second, as in our previous studies, findings must be interpreted cautiously, because of (a) a limited sample of deaf adolescents, namely, they who suffer from (severe) language disabilities, and (b) a limited sample size. Lastly and unfortunately, mean percentage agreement between observers is not satisfactory for all target behaviors. For Experiment 1, the mean percentages agreement between observers are below 80% for keeping to the subject of conversation, communicating orally, and for using correct sentences. For Experiment 2, this is true for communicating orally and for using correct sentences. The low percentages agreement might be due to the low occurrences of these behaviors.

In spite of these limitations, we believe that a training package consisting of self-management procedures and modeling may be effective in improving social behaviors with deaf adolescents. However, a few qualifications should be made. First, procedures to promote social validation of the procedures have to be a prominent strategy in (a) selecting the target behavior and defining the appropriate and inappropriate instances and (b) developing the training procedures. Second, a mediator (e.g., teachers, residential staff members, or parents) directed supervision and feedback provided by a professional, should be incorporated in the training

package. Third, procedures to promote generality of effects are required to accomplish maintenance of effects.

Replication of this study is needed in order to demonstrate the internal validity of the study as well as the external validity of the procedures. In order to demonstrate the internal validity of the study, the interobserver agreement has to be a main concern. In order to demonstrate the external validity of the procedures, replications should be conducted with other populations, with other social behaviors, and in other settings.

Hoofdstuk 5
Algemene Conclusies en Aanbevelingen

5.0 Inleiding en overzicht

In dit hoofdstuk worden de onderzoeken, die in de hoofdstukken 2, 3 en 4 zijn gepresenteerd, gerelateerd aan de literatuur, zoals deze is beschreven in hoofdstuk 1 Tevens zullen naar aanleiding van de resultaten van de verrichte onderzoeken aanbevelingen gedaan worden met betrekking tot de onderkenning en behandeling van specifieke tekorten in de sociale vaardigheden bij auditief gehandicapte kinderen en adolescenten met (ernstige) stoornissen in de taalverwerving

5.1 Algemene conclusies

Op basis van literatuuronderzoek werd in hoofdstuk 1 geconcludeerd dat auditief gehandicapte personen over het algemeen (a) meer emotionele en gedragsproblemen vertonen, (b) sociaal onvolwassener zijn, en (c) een achterstand hebben in het verwerven van sociale cognitie Eén van de aanbevelingen om deze situatie te verbeteren is het remedieren van specifieke tekorten, hetzij in de sociale cognitie, hetzij in de sociale vaardigheden Gezien het feit dat het aanleren van sociaal cognitieve vaardigheden niet noodzakelijk tot gedragsverandering leidt (Kazdin, 1974), én omdat prosociaal gedrag voor een groot deel toegeschreven wordt aan observationeel en operant leren (Bandura, 1971, Rushton, 1982) heeft het remedieren van tekorten in de sociale vaardigheden middels procedures uit de operante en sociale leertheorie prioriteit gekregen Dit neemt niet weg dat programma's gericht op remediering van tekorten in sociale cognitie betekenis kunnen hebben Gresham (1981) stelt in dit verband, dat er een onderscheid gemaakt kan worden tussen 'skill deficits', 'performance deficits' en self-control deficits' De eersten hebben betrekking op het niet vertonen van een bepaalde sociale vaardigheid omdat kennis over deze vaardigheid ontbreekt, 'performance deficits' hebben betrekking op het niet vertonen van een bepaalde sociale vaardigheid als gevolg van response-inhiberende angsten of een gebrek aan motivatie, 'self-control deficits hebben betrekking op het onvermogen impulsieve, agressieve, danwel storende gedragingen te inhiberen Programma's gericht op

remediëring van tekorten in de sociale cognitie kunnen wellicht van betekenis zijn bij 'skill deficits'.

In subparagraaf 1.4.2 zijn een aantal axioma's gepresenteerd aan de hand waarvan men programma's voor het aanleren van sociale vaardigheden, gebaseerd op procedures uit de operante en sociale leertheorie, (a) versterkt middels het actief programmeren van strategieën voor gedragsverandering over verschillende condities, (b) sociaal valideert en (c) wetenschappelijk evalueert. Deze axioma's zijn toegepast in de vijf onderzoeken van dit proefschrift.

Middels het normatief onderzoek, gepresenteerd in hoofdstuk 2, is getracht de keuze van een aantal problematische vaardigheden door leerkrachten van auditief gehandicapte kinderen met ernstige stoornissen in de taalverwerving, voor remediëring te legitimeren. In overeenstemming met het sociaal validiteits perspectief hebben belangrijke personen in de omgeving van deze groep auditief gehandicapte kinderen, namelijk hun leerkrachten, een aantal vaardigheden geformuleerd die, naar hun mening, in frequentie en wenselijkheid afwijken van die van horende leeftijdsgenoten. Vervolgens is aan deze leerkrachten én leerkrachten van een aantal basisscholen in dezelfde regio gevraagd deze vaardigheden te concretiseren. Door gedragsobservatie is vastgesteld dat auditief gehandicapte kinderen met ernstige stoornissen in de taalverwerving, in vergelijking met horende leeftijdsgenoten, minder gewenste exemplaren en meer ongewenste exemplaren van de twee doelgedragingen tijdens taallessen vertonen. Tevens vertonen deze auditief gehandicapte kinderen minder gewenste exemplaren van één doelgedrag tijdens gezelschapsspelen dan horende leeftijdsgenoten. Het belang van dit onderzoek is tweeledig. Ten eerste bevestigt en versterkt dit onderzoek de literatuur aangaande het voorkomen van gedragsproblemen bij auditief gehandicapte personen. De versterkende factor is gelegen in de methode van dataverzameling. In dit onderzoek zijn de data verzameld via gedragsobservatie in de natuurlijke situatie, dit in tegenstelling tot het afnemen van vragenlijsten, zoals gebruikelijk bij dit type van onderzoek (Freeman, Malkin, & Hastings, 1975; Meadow,1980; Meadow & Schlesinger, 1971; Vernon, 1969). Ten tweede, het vaststellen van tekorten in sociaal gevalideerde sociale vaardigheden middels normatief onderzoek in natuurlijke situaties kan een positief effect hebben op de implementatie van een

programma ter remediëring van deze tekorten, dat gebaseerd is op procedures uit de operante en sociale leertheorie.

Wanneer gedragsproblemen worden gesignaleerd bij een persoon of groep personen door belangrijke mensen in de directe omgeving van deze persoon of personen, is het niet altijd noodzakelijk om normatief onderzoek te doen ter legitimering van remediëring van deze problemen. De persoon of personen in kwestie maakt / maken immers deel uit van een sociaal systeem waarbinnen de vermeende gedragsproblemen, al dan niet afwijkend van een normgroep, een negatief effect hebben op de interactie met mensen uit dit sociaal systeem. Een negatieve spiraal werking is dan niet uit te sluiten. Een andere situatie ontstaat als mensen uit dezelfde maatschappij, maar niet uit de directe omgeving, gedragsproblemen signaleren en belangrijke mensen uit de directe omgeving niet. Dan is, mijns inziens, normatief onderzoek door middel van gedragsobservaties in natuurlijke situaties gewenst om het probleem zichtbaar te maken.

Op basis van de resultaten van het onderzoek in Hoofdstuk 2 én de wens van leerkrachten en groepsleiding om de sociaal-emotionele ontwikkeling van deze groep kinderen te stimuleren, is er een programma voor het trainen van sociale vaardigheden ontwikkeld. Dit programma maakt gebruik van procedures uit de operante en sociale leertheorie, waarbij de axioma's van subparagraaf 1.4.2, exclusief dat van de dataverzameling (§ 1.4.2.3), zijn toegepast. Deze axioma's zijn vertaald in 'procedures to promote generality of effects' en 'procedures to promote the social validity of the procedures' (zie voor een beschrijving bijvoorbeeld blz. 31-32).

In hoofdstuk 3 worden een drietal onderzoeken gepresenteerd die de effectiviteit van bovengenoemd programma in combinatie met bovengenoemde procedures hebben vastgesteld. In het eerste onderzoek (§ 3.1) is de effectiviteit van het programma vastgesteld voor drie doelgedragingen bij negen acht- en negenjarige auditief gehandicapte kinderen met stoornissen in de taalverwerving. Het percentage gewenste exemplaren van optreden van alle drie doelgedragingen nam toe in functie van de training. Trainingseffecten generaliseerden over tijd, activiteiten, personen en situaties. Het programmeren van strategieën voor gedragsverandering over verschillende condities kan hiervoor verantwoordelijk gesteld worden, aangezien

programma's die gebaseerd zijn op leertheoretische principes niet noodzakelijk tot generalisatie van trainingseffecten hoeven te leiden (Baer, Wolf, & Risley, 1968; Drabman, 1976; Edelstein, 1989; Kazdin, 1975; Stokes & Baer, 1977; Stokes & Osnes, 1989). De sociale validering van de keuze en de concretisering van de doelgedragingen en de sociale validering van het programma hebben, mijns inziens, ertoe bijgedragen dat leerkrachten en groepsleiding gemotiveerd zijn geweest het programma, met name het tokensysteem, uit te voeren. Het feit dat ze om continuering van training van sociale vaardigheden conform het programma hebben gevraagd, bevestigt hun instemming met de mate van hun participatie in het gehele proces, van selectie van doelgedragingen tot en met de uitvoering van het programma. Omdat (a) de verschillen tussen baseline en training groot zijn, (b) stimulus generalisatie optreedt en (c) de data, middels gedragsobservatie, verzameld zijn in, door leerkrachten en groepsleiding gekozen, sociaal relevante natuurlijke situaties, mag geconcludeerd worden dat het programma klinisch relevante effecten heeft bewerkstelligd. Omdat het programma ook sociaal gevalideerd is mag tevens geconcludeerd worden dat het toepassen van het programma in combinatie met de beschreven procedures voor gedragsverandering over verschillende condities en de procedures voor de sociale validiteit, een effectieve en gebruiksvriendelijke manier is om tot gedragsverandering te komen.

Om zowel de effectiviteit van het programma vast te stellen bij oudere auditief gehandicapte kinderen met dezelfde stoornissen als de interne validiteit van het onderzoek te bevestigen, is het tweede onderzoek (§ 3.2) uitgevoerd. De kinderen in dit onderzoek zijn negen twaalf- en dertienjarige auditief gehandicapte kinderen met stoornissen in de taalverwerving. Het programma is ten opzichte van het programma in het eerste onderzoek licht veranderd. Leeftijdsgebonden aanpassingen en aanpassing in de begeleiding van leerkrachten en groepsleiding zijn gemaakt in overleg met deze leerkrachten en groepsleiding. De strategieën voor gedragsverandering over verschillende condities en voor de sociale validiteit zijn evenwel onveranderd gebleven. Om de interne validiteit van het eerste onderzoek, en daarmee ook van dit onderzoek, te bevestigen, is de tijdsvolgorde in training van de drie doelgedragingen veranderd. Hierdoor zouden volgorde effecten uitgesloten kunnen worden. De resultaten van het tweede onderzoek ondersteunen de resultaten van het eerste onderzoek. Evenals bij het eerste onderzoek, laten de resultaten zien dat er een verband bestaat tussen toeneming in percentage gewenste exemplaren van

de drie sociale vaardigheden en de training van deze sociale vaardigheden conform het programma.

De bij het eerste onderzoek beschreven conclusies blijven van kracht. Sociale vaardigheden kunnen getraind worden bij auditief gehandicapte kinderen met stoornissen in de taalverwerving, in de leeftijdsgroep van acht tot dertien jaar. Hoewel de effectiviteit van het totale programma is vastgesteld, is het belangrijk om het differentiële effect van de componenten van dit programma vast te stellen. Het aantonen en elimineren van ineffectieve componenten kan de efficiency en de gebruiksvriendelijkheid van het programma doen toenemen. Het vaststellen van het differentiële effect van de cognitieve mediatie procedure, de zes probleem-oplossingslessen, heeft significantie, omdat het effect van deze component betwijfeld mag worden. Deze component heeft namelijk tot doel het bevorderen van een denkstrategie die een goed sequentieel geheugen vereist. Echter, het programma is speciaal bedoeld voor auditief gehandicapte kinderen met een relatief zwak sequentieel geheugen.

In het derde onderzoek van hoofdstuk 3 (§ 3.3) werden het effect van het totale programma en het differentiële effect van de zes probleemoplossingslessen vastgesteld. Vier sociaal gevalideerde sociale vaardigheden werden getraind bij twintig zeven tot dertien jarige auditief gehandicapte kinderen met ernstige stoornissen in de taalverwerving. De twintig kinderen werden per klas random toegewezen over twee groepen. Twee trainingspakketten, het volledige programma en het volledige programma minus de probleemoplossingslessen, werden in een multiple baseline design in combinatie met een zogenaamd inverted design, afwisselend toegepast binnen de twee groepen (zie Fig 3.7, blz. 63). Deze combinatie van experimentele designs geeft een sterk methodologische basis, omdat een aantal rivaliserende hypothesen (zie blz.73) verworpen kunnen worden. Evenals in de voorafgaande onderzoeken zijn data verzameld door gedragsobservatie in sociaal relevante natuurlijke situaties. Resultaten van dit onderzoek bevestigen de resultaten van de eerste twee onderzoeken aangaande de effectiviteit van het totale programma. Ook in dit onderzoek nam het percentage gewenste exemplaren van optreden van de doelgedragingen toe in functie van de training van deze gedragingen middels het totale programma, én generaliseerden trainingseffecten over tijd, activiteiten, personen en situaties. Er is evenwel geen

verschil vastgesteld in effectiviteit tussen het totale programma en het gedeeltelijk programma. Geconcludeerd mag dan ook worden dat de cognitieve mediatie procedure, de zes probleemoplossingslessen, geen toevoegend effect heeft gehad.

Over in hoeverre de cognitieve mediatie procedure een bijdrage kan leveren aan het remediëren van tekorten in de sociale cognitie, kan op basis van de resultaten in hoofdstuk 3 geen uitspraak gedaan worden. Wel kan gesteld worden dat wanneer de nadruk gelegd wordt op remediëren van tekorten in vaardigheden c.q. gedrag, dit gedrag ook getraind dient te worden. Dit wil zeggen, gedrag dient onder controle gebracht te worden van antecedenten en consequenten. Het vertonen van gedrag veronderstelt meer dan alleen kennis.

In hoofdstuk 4 werd een tweetal experimenten gepresenteerd, waarin de effectiviteit van een programma voor het trainen van sociale vaardigheden bij auditief gehandicapte adolescenten met stoornissen in de taalverwerving werd vastgesteld. Dit programma verschilt wezenlijk van dat voor de kinderen. In overeenstemming met een trend in de gedragstherapie en in overeenstemming met de wens van de leerkrachten en groepsleiding van deze adolescenten werd de controle over het gedrag bij de adolescenten zelf gelegd. Het essentiële verschil met het programma voor de kinderen is het gebruik van zogenaamde self-management procedures, in plaats van externe beloning van gewenste exemplaren van optreden van de doelgedragingen en externe correctie van ongewenste exemplaren van optreden van de doelgedragingen. Hoewel het toevoegend effect niet is aangetoond (zie boven), is de cognitieve mediatie procedure in een afgeslankte en gewijzigde vorm toch onderdeel van het programma, aangezien leerkrachten en groepsleiding in de voorbesprekingen aangaven dat 'hun' adolescenten tekorten vertoonden in de sociale cognitie. De procedures voor gedragsverandering over verschillende condities en voor de sociale validiteit werden wederom toegepast. De resultaten van het eerste experiment tonen aan dat dit programma effectief is in het doen toenemen van het percentage gewenste exemplaren van vijf doelgedragingen bij vier auditief gehandicapte adolescenten met stoornissen in de taalverwerving. De resultaten van het tweede experiment tonen echter aan dat het programma bij auditief gehandicapte adolescenten met ernstige stoornissen in de taalverwerving, geen éénduidig effect heeft gehad. Een aantal verklaringen hiervoor zijn besproken in paragraaf 4.4. Wellicht heeft het uitvoeren van het onderzoek dat strenge eisen stelt aan (a) de

uitvoering van het programma, (b) de observaties in de klas en op de leefgroep en (c) de tijd waarin het programma uitgevoerd moet worden, het gevoel van autonomie bij leerkrachten en groepsleiding in het tweede experiment zodanig aangetast, dat ze minder gemotiveerd waren om het programma conform de uitgangspunten uit te voeren. Wetenschappelijk onderzoek in de natuurlijke situatie, met name gedragsonderzoek, kan een reactief effect hebben op de integriteit van de onafhankelijke variabele (Peterson, Homer, & Wonderlich, 1982). In deze moet dan ook een onderscheid gemaakt worden tussen het toepassen van het programma en de uitvoering van een wetenschappelijk onderzoek. Het feit dat leerkrachten en groepsleiding van het tweede experiment hebben gevraagd om continuering van het trainen van sociale vaardigheden met dit programma is wellicht hierdoor te verklaren.

De rol van belangrijke mensen in de omgeving in het vertonen van gewenst gedrag blijft belangrijk, ook al worden self-management procedures gebruikt om dit gedrag te trainen. Al is de route enigszins anders, ook hier geldt hetzelfde als bij de kinderen; gedrag moet onder controle gebracht worden van antecedenten en consequenten. De adolescenten moeten ervaren dat hetgeen ze getraind hebben, toegepast kan worden in hun dagelijks leven. Dit veronderstelt een juiste en consequente reaktie van deze belangrijke personen in de omgeving van de adolescent.

5.2 Aanbevelingen

De aanbevelingen in deze paragraaf richten zich vooral op de praktische consequenties van de algemene conclusies voor de implementatie van de programma's.

De keuze van de doelgedragingen kan op verschillende manieren tot stand komen. Belangrijk hierbij is de fysieke en functionele nabijheid van de persoon (directe gebruiker, indirecte gebruiker, mensen uit dezelfde omgeving of mensen uit dezelfde maatschappij), die de tekorten in de sociale vaardigheid signaleert. Worden de tekorten gesignaleerd door leerkrachten en of groepsleiding dan is de noodzaak voor normatief onderzoek meestal afwezig (zie boven). Worden de tekorten echter gesignaleerd door mensen die verder afstaan van de kinderen of adolescenten,

bijvoorbeeld het hoofd van de school c.q. internaat, en wordt deze signalering niet onderkend door leerkrachten of groepsleiding, dan is het uitvoeren van normatief onderzoek een eerste vereiste.

Nadat een aantal vaardigheden voor training in overleg met leerkrachten en groepsleiding zijn geselecteerd en voorzien van een prioriteitsstelling, is het belangrijk de leerkrachten en groepsleiding te consulteren over de gewenste en ongewenste exemplaren van deze doelgedragingen. Training van doelgedragingen die in een natuurlijke relatie staan met belonende consequenties, die niet geprogrammeerd hoeven te worden, heeft een positief effect op de generalisatie van trainingsresultaten over de tijd (Stokes & Osnes, 1989). Ter sociale validering van het programma, moeten leerkrachten en groepsleiding ook geconsulteerd worden met betrekking tot de aanpassing van het programma aan (a) het niveau van de kinderen of adolescenten en (b) hun eigen wensen met betrekking tot de praktische uitvoering. De mate van inbreng van leerkrachten en groepsleiding, een subjectieve factor, kan van invloed zijn op de acceptatie van het programma (Schwartz & Baer, 1991). Er kan evenwel geen sprake zijn van aanpassingen in de structuur van het programma. Het programma moet de volgende componenten bevatten: (a) de drie introductielessen; (b) het tokensysteem en sociale reinforcement voor gewenste exemplaren, en (c) de correctieprocedure voor ongewenste exemplaren.

Bij de praktische uitvoering van het programma is het volgende van belang. Ten eerste, het gebruik van het tokensysteem kan in de eerste week er toe leiden dat kinderen de gewenste exemplaren vertonen in een onnatuurlijk hoge frequentie op allerlei momenten van de dag en in allerlei situaties. Deze reactie van de kinderen kan uitgelegd worden als het gericht zijn op het verkrijgen van de beloning. Hoewel dit het geval kan zijn, heeft dit gedrag ook een andere functie, namelijk het ontdekken van de mogelijkheden om invloed uit te oefenen op de omgeving. Door het verstrekken van de tokens conform het schema 'het gemiddeld percentage tokens per dag', en door consequent de juiste consequentie te laten volgen op het gedrag, zal deze onnatuurlijk hoge frequentie vanzelf verdwijnen. Ten tweede is het van belang dat het voor de kinderen en adolescenten te allen tijde duidelijk is wat de gewenste en ongewenste exemplaren van het doelgedrag in training zijn. De lijst van gewenste en ongewenste exemplaren moet dan ook zichtbaar opgehangen worden in de klas en op de leefgroep. Dit geldt ook voor de beloningskaarten. Deze

lijst en beloningskaarten kunnen dan als discriminatieve stimuli werken. Ten derde, hoewel het programma gericht is op het remediëren van sociale vaardigheden bij auditief gehandicapte kinderen en adolescenten met stoornissen in de taalverwerving, wordt impliciet het gedrag van leerkrachten en groepsleiding eveneens geremedieerd. In feite zijn zij het die het sociaal gedrag van de kinderen en adolescenten grotendeels vormen en in stand houden. Een goede begeleiding van leerkrachten en groepsleiding is daarom gewenst.

Een punt dat afzonderlijke aandacht verdient is de uitgebreidheid van het sociale systeem waarbinnen het programma toegepast wordt. Het is onmogelijk om alle situaties, waarin alle personen waarmee een kind in aanraking komt, in het programma te betrekken. Dit is ook wellicht niet nodig en ook niet gewenst. Stokes en Baer (1977) en Stokes en Osnes (1989) recommanderen "loose training", het minder discriminatief maken van stimuli, voor het actief bewerkstelligen van generalisatie van trainingsresultaten over situaties, personen en settings. Het is evenwel belangrijk zoveel mogelijk mensen in de directe omgeving te informeren over wat de gewenste en ongewenste exemplaren zijn en ze te vragen hiermee rekening te houden in hun reactie op deze gewenste en ongewenste exemplaren. Om het getrainde sociaal gedrag in stand te houden (stimulusgeneralisatie over tijd) is het van belang dat, nadat training van dat gedrag is gestopt, leerkrachten, groepsleiding en de hierboven beschreven mensen in de directe omgeving op een juiste manier blijven reageren op de gewenste en ongewenste exemplaren.

Evaluatie van het programma als laatste stap in het implementatieproces kan zich richten op twee punten. Ten eerste op het effect van het programma. Eén manier om het effect van het programma te evalueren en die relatief makkelijk uitvoerbaar is, is het achteraf scoren van video-opnamen van het doelgedrag voor, tijdens en na de training. De opnamen dienen, uiteraard random, aangeboden te worden aan een aantal mensen die de kinderen c.q. adolescenten goed kennen. Het tweede aandachtspunt is de sociale validering van het programma en de resultaten. Hiervoor zouden vragenlijsten afgenomen kunnen worden bij leerkrachten en groepsleiding met betrekking tot de wenselijkheid en hun beleving van het programma en zijn componenten, en met betrekking tot de wenselijkheid en hun beleving van de resultaten. Op basis hiervan zou het programma binnen de reeds beschreven marges verder aangepast kunnen worden.

In toekomstig onderzoek zou de effectiviteit van de programma's voor het trainen van sociale vaardigheden en de effectiviteit van de componenten onderzocht moeten worden voor andere groepen (auditief gehandicapte) kinderen en adolescenten en voor andere doelgedragingen. Mijns inziens zijn deze programma's ook uitermate geschikt voor het trainen van sociale vaardigheden bij kinderen en adolescenten in het speciaal onderwijs, omdat het gebruik van deze programma's resulteert in (a) een duidelijke structuur en (b) een interne locus of control. Om de interne validiteit van bovengenoemd onderzoek te bewerkstelligen zou het design zoals beschreven in paragraaf 3.3 gebruikt kunnen worden. Tevens zou middels longitudinaal onderzoek vastgesteld moeten worden in hoeverre de resultaten over langere tijd gehandhaafd blijven, en welke factoren hiervoor verantwoordelijk zijn. Een laatste aanbeveling voor onderzoek richt zich op de participatie van ouders in het trainen van prosociaal gedrag. Participatie van ouders kan wellicht een bijdrage leveren aan de generalisatie van trainingseffecten over personen, situaties en settings.

Samenvatting

Gedurende de laatste twee decennia is er hoge prioriteit om auditief gehandicapten te integreren in de samenleving. Succesvolle integratie is afhankelijk én van de bereidheid en de mogelijkheden van de samenleving om auditief gehandicapten op te nemen én van de sociale- en communicatieve competentie van auditief gehandicapten. Sociaal competent handelen veronderstelt sociale cognitie, dit is, inzicht in sociale situaties en kennis over normen en waarden die binnen een samenleving gelden, vaardigheden om conform deze waarden en normen te handelen en motivatie om aangepast sociaal gedrag te vertonen. De onderzoeken in dit proefschrift betreffen het remediëren van tekorten in bovenstaande vaardigheden bij auditief gehandicapte kinderen en adolescenten met stoornissen in de taalverwerving.

In *Hoofdstuk 1* is, nadat een overzicht gegeven is van een aantal factoren die van invloed kunnen zijn op het sociaal competent handelen van auditief gehandicapten en nadat de literatuur aangaande het voorkomen van emotionele en gedragsproblemen bij auditief gehandicapten beschreven is, geconcludeerd dat de sociale en persoonlijkheidsontwikkeling van auditief gehandicapten negatief beïnvloed wordt door een interactie van factoren, sommigen als consequentie van de auditieve handicap en sommigen als consequentie van de mogelijkheden van de omgeving om hiermee om te gaan. In paragraaf 1.3 zijn aanbevelingen die in de literatuur worden gedaan om deze situatie te verbeteren, beschreven. Eén daarvan is het remediëren van tekorten in sociale vaardigheden. Een overzicht van de literatuur met betrekking tot het trainen van sociale vaardigheden bij een diversiteit van klinische populaties in het algemeen (§ 1.4.0) en bij auditief gehandicapten in het bijzonder (§ 1.4.1) is vervolgens gegeven. Procedures uit de operante en sociale leertheorie liggen voornamelijk ten grondslag aan de beschreven programma's voor het trainen van de vaardigheden. Tenslotte zijn in dit hoofdstuk een aantal inzichten, die binnen het wetenschappelijk gedragsonderzoek van belang zijn, besproken en toegepast op de studies waarin programma's voor het trainen van sociale vaardigheden bij auditief gehandicapten zijn beschreven.

In *Hoofdstuk 2* is een normatief vergelijkingsonderzoek gepresenteerd waarin voor een aantal gedragingen objectief vastgesteld is in welke mate de frequentie van voorkomen bij elf auditief gehandicapte kinderen met ernstige stoornissen in de taalverwerving verschillen van elf horende leeftijdsgenoten in de leeftijd van vier tot acht jaar. De belangrijkste communicatiecode van deze auditief gehandicapte kinderen is vingerspelling. De doelgedragingen waren op de beurt wachten en aandacht vragen tijdens taalsituaties en op de beurt wachten en omgang tijdens gezelschapsspelen. Data zijn eens per week gedurende een periode van zes weken verzameld in beide situaties. Op basis van de resultaten van dit onderzoek is geconcludeerd dat de auditief gehandicapte kinderen minder gewenste exemplaren en meer ongewenste exemplaren vertonen van de doelgedragingen tijdens de taallessen en van op de beurt wachten tijdens de gezelschapsspelen. Dit onderzoek is uitgevoerd ter legitimatie van het trainen van deze vaardigheden.

In *Hoofdstuk 3* zijn een drietal onderzoeken gepresenteerd waarin de effectiviteit is vastgesteld van een programma voor het trainen van sociale vaardigheden bij auditief gehandicapte kinderen met stoornissen in de taalverwerving. Dit programma bevat een kindgerichte training bestaande uit: (a) negen lessen, drie introductielessen en zes probleemoplossingslessen; (b) contingente reinforcement van het optreden van gewenste exemplaren van het gedrag in training; en (c) corrigeren van het optreden van ongewenste exemplaren van het gedrag in training. Tevens bevat dit programma een mediatorgerichte training bestaande uit supervisie, feedback en goalsetting. Procedures voor gedragsverandering over verschillende condities en voor sociale validiteit zijn toegepast. Data zijn verzameld in klassen en op leefgroepen door middel van video-opnamen. De data zijn vervolgens gescoord volgens de procedures van event recording en partial-interval recording. Om de interne validiteit van de eerste twee onderzoeken te waarborgen, is gebruik gemaakt van een multiple baseline design. Voor het derde onderzoek is voor dit doel gebruik gemaakt van een combinatie van een multiple baseline design en een inverted design. Uit de resultaten van deze onderzoeken is geconcludeerd dat bovengenoemd programma in combinatie met bovengenoemde procedures voor gedragsverandering over verschillende condities en voor sociale validiteit effectief is in het remediëren van tekorten in sociale vaardigheden bij auditief gehandicapte kinderen met (ernstige) stoornissen in de taalverwerving. In het derde onderzoek is eveneens vastgesteld dat de probleemoplossingslessen geen toevoegend effect hebben gehad.

In *Hoofdstuk 4* zijn twee onderzoeken gepresenteerd waarin de effectiviteit is vastgesteld van een programma voor het trainen van sociale vaardigheden in combinatie met procedures voor gedragsverandering over verschillende condities en voor sociale validiteit bij auditief gehandicapte adolescenten met (ernstige) stoornissen in de taalverwerving. In dit programma wordt de controle over het optreden van gewenste en ongewenste exemplaren van het gedrag in training uitgevoerd door de adolescenten zelf; self-management procedures zijn toegepast. Dataverzameling is uitgevoerd conform de onderzoeken in Hoofdstuk 3. Hoewel de resultaten van het eerste experiment vergelijkbaar zijn met die van Hoofdstuk 3, wordt in het tweede experiment geen éénduidig effect van dit programma in combinatie met bovenstaande procedures aangetoond. Een reactief effect van het wetenschappelijk onderzoek op de integriteit van de onafhankelijke variabele kan de resultaten van het tweede onderzoek negatief hebben beïnvloed.

In *Hoofdstuk 5*, tenslotte, zijn de onderzoeken die in de hoofdstukken 2, 3 en 4 zijn gepresenteerd, gerelateerd aan de literatuur zoals deze is beschreven in Hoofdstuk 1. Tevens zijn naar aanleiding van de resultaten van de onderzoeken een aantal aanbevelingen gedaan met betrekking tot de onderkenning en behandeling van specifieke tekorten in de sociale vaardigheden bij auditief gehandicapte kinderen en adolescenten met (ernstige) stoornissen in de taalverwerving.

Summary

During the past two decades, integration of hearing-impaired persons into the community has received high priority. Successful integration depends on both normal hearing individuals' acceptance of hearing-impaired persons and hearing-impaired persons' ability to interact effectively with normal hearing persons. The ability to interact effectively presumes social cognition, social skills, and the motivation to interact sociably. The studies of this thesis are concerned with the remediation of social deficits of language-disabled deaf persons.

Chapter 1 presents a review of the literature concerning the environmental and physiological factors that have an impact on the hearing-impaired persons' ability to interact effectively. Studies that have documented deficits in the social development of hearing-impaired persons are presented as well. It is concluded that these deficits have to be remediated. In paragraph 1.4, a number of studies that have been conducted to evaluate procedures to remediate social skill deficits with hearing-impaired persons have been discussed with respect to a number of critical issues in the behavioral literature.

Chapter 2 presents a study in which several social behaviors of hearing-impaired children and normal hearing children are compared. The hearing-impaired children were diagnosed as dysphatic with severe to profound hearing losses and communication with them was augmented by fingerspelling and written language. Target behaviors were turn waiting and initiating interaction during grammar lessons, and turn waiting and interacting with others during parcheesi. For both groups, data were collected during six grammar lessons and six parcheesi games, over a period of six weeks. Results suggest that hearing-impaired children with severe language disabilities, as compared to their hearing peers, show fewer instances of appropriate social behaviors and more instances of inappropriate social behaviors during grammar lessons. During parcheesi, there was only a difference between the two groups for turn waiting.

Chapter 3 presents three studies in which the effects of a multifaceted training procedure are assessed on the acquisition and generalization of social behaviors

with (severely) language-disabled deaf children. The training package included child training, using behavior modification and cognitive mediation procedures, and mediator training, using organizational behavioral management procedures. The package included procedures to promote generality of effects and the social validity of the procedures as well. Data were collected within a multiple baseline design across behaviors. For the third study, data were collected using a combination of a multiple baseline design across behaviors and an inverted design. Target behaviors, which were selected by teachers and residential staff members, were recorded in several natural settings, during several activities, and across several persons. The results of all three studies showed a functional relationship between introduction of the training procedure and increases in percentage of appropriate target behaviors. Maintenance of effects were demonstrated as well. In the third study, however, the cognitive mediation component failed to differentially influence the effects.

In Chapter 4, a study is presented in which two experiments are conducted to assess the effectiveness of a training package on the acquisition and generalization of social behaviors with (severe) language-disabled deaf adolescents. The training package consisted of modeling, self-monitoring, self-reinforcement, and mediator directed supervision and feedback. Procedures to promote generality of effects and the social validity of the procedures were used as well. Target behaviors, which were selected by teachers and residential staff members, were recorded in several natural settings, during several activities, and across several persons. Data were collected within a multiple baseline design across behaviors. Results indicated that the training package was effective in improving the performances of all participants. However, the increases in percentage of appropriate target behaviors were more substantial for the language-disabled deaf adolescents than for the severely language-disabled deaf adolescents. Maintenance of effects were demonstrated as well.

In *Chapter 5*, the findings of the training studies are related to the literature of chapter 1 and the implications of these studies for the implementation of the training packages are discussed.

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Curriculum Vitae

Eef Rasing, geboren op 26 november 1960, behaalde in 1980 het VWO diploma aan het Canisius College te Nijmegen. In 1982 begon hij de studie Orthopedagogiek aan de Katholieke Universiteit Nijmegen. Onder supervisie van Prof. dr. P. C. Duker deed hij onderzoek naar het effect van omgevingstimulatie op een aantal gedragingen bij ernstig geestelijk gehandicapte personen met autistiform gedrag. Dit onderzoek is gepubliceerd in *Journal of Autism and Developmental Disorders*. In december 1986 behaalde hij het doctoraal examen orthopedagogiek met als specialisatie ontwikkelingsstoornissen. In 1987 was hij werkzaam aan de Katholieke Universiteit Nijmegen met als taak het evalueren van een programma voor het aanleren van sociale vaardigheden bij meervoudig gehandicapte dove kinderen van het Instituut voor Doven te Sint-Michielsgestel Van 1988 tot 1992 was hij werkzaam als AIO aan de Katholieke Universiteit Nijmegen. In deze dissertatie wordt verslag gedaan van het onderzoek dat in deze periode is uitgevoerd

Stellingen
behorende bij het proefschrift

Acquisition and generalization of social behaviors in language-disabled deaf person.

1. Gedragstherapie is één van de meest humane psychologische therapieën.

2. Gedrag dient te worden getraind, niet te worden aangeleerd.
(dit proefschrift)

3. Training van gedragingen die in een natuurlijke relatie staan met belonende consequenties, die niet geprogrammeerd hoeven te worden, heeft een positief effect op de generalisatie van trainingsresultaten over de tijd.
(dit proefschrift)

4. Personen met een auditieve beperking verschillen in beginsel niet van horende personen met betrekking tot de sociaal-emotionele ontwikkeling.
(dit proefschrift)

5. De kwaliteit van het universitair onderwijs zou verbeterd kunnen worden door het formatiebudget los te koppelen van het aantal afgestudeerde studenten.

6. Door het plaatsen van extra verkeerslichten op wegen waar doorgaans te hard wordt gereden, en het koppelen van het aantal minuten 'rood' en 'groen' van deze verkeerslichten aan het percentage snelheidsovertreders heeft een positief effect op dit percentage.

7. Meer politie, meer cellen, strafkampen, meer regels, meer controle en praten over normen en waarden leiden niet tot een veiliger maatschappij, integendeel, het zijn populistische maatregelen/ ideeën om een meer structurele benadering van het probleem van onveiligheid te ontvluchten.

8. Het voetbalvandalisme vraagt om een positieve aanpak. In de Studio Sport uitzending op zondagavond verloot Mart Smeets gratis treinreizen en toegangsbewijzen voor de eerstvolgende uitwedstrijd onder de supportersclubs van zowel de uitspelende als thuisspelende ploegen die die zaterdag of zondag geen vernielingen hebben veroorzaakt en geen geweld hebben gebruikt.

9. Een positieve reactie op dit proefschrift heeft zeker invloed op mijn zelfbeeld.

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